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(54) Title: COMPOSITIONS AND METHODS FOR THERAPY AND DIAGNOSIS OF PROSTATE CALCULA

(57) Abstract

Compositions and methods for the therapy and diagnosis of cancer, such as prostate cancer, are disclosed. Compositions may comprise one or more prostate tumor proteins, immunogenic portions thereof, or polynucleotides that encode such portions. Alternatively, a therapeutic composition may comprise an antigen presenting cell that expresses a prostate tumor protein, or a T cell that is specific for cells expressing such a protein. Such compositions may be used, for example, for the prevention and treatment of diseases such as prostate cancer. Diagnostic methods based on detecting a prostate tumor protein, or mRNA encoding such a protein, in a sample are also provided.

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COMPOSITIONS AND METHODS FOR THERAPY AND DIAGNOSIS OF PROSTATE CANCER

TECHNICAL FIELD

The present invention relates generally to therapy and diagnosis of cancer, such as prostate cancer. The invention is more specifically related to polypeptides comprising at least a portion of a prostate tumor protein, and to polynucleotides encoding such polypeptides. Such polypeptides and polynucleotides may be used in vaccines and pharmaceutical compositions for prevention and treatment of prostate cancer, and for the diagnosis and monitoring of such cancers.

BACKGROUND OF THE INVENTION

Prostate cancer is the most common form of cancer among males, with an estimated incidence of 30% in men over the age of 50. Overwhelming clinical evidence shows that human prostate cancer has the propensity to metastasize to bone, and the disease appears to progress inevitably from androgen dependent to androgen refractory status, leading to increased patient mortality. This prevalent disease is currently the second leading cause of cancer death among men in the U.S.

In spite of considerable research into therapies for the disease, prostate cancer remains difficult to treat. Commonly, treatment is based on surgery and/or radiation therapy, but these methods are ineffective in a significant percentage of cases. Two previously identified prostate specific proteins - prostate specific antigen (PSA) and prostatic acid phosphatase (PAP) - have limited therapeutic and diagnostic potential. For example, PSA levels do not always correlate well with the presence of prostate cancer, being positive in a percentage of non-prostate cancer cases, including benign prostatic hyperplasia (BPH). Furthermore, PSA measurements correlate with prostate volume, and do not indicate the level of metastasis.

In spite of considerable research into therapies for these and other cancers, prostate cancer remains difficult to diagnose and treat effectively. Accordingly, there is a need in the art for improved methods for detecting and treating such cancers. The present invention fulfills these needs and further provides other related advantages.

SUMMARY OF THE INVENTION

Briefly stated, the present invention provides compositions and methods for the diagnosis and therapy of cancer, such as prostate cancer. In one aspect, the present invention provides polypeptides comprising at least a portion of a prostate tumor protein, or a variant thereof. Certain portions and other variants are immunogenic, such that the ability of the variant to react with antigen-specific antisera is not substantially diminished. Within certain embodiments, the polypeptide comprises at least an immunogenic portion of a prostate tumor protein, or a variant thereof, wherein the tumor protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of: (a) sequences recited in any one of SEQ ID NOs:1-111, 115-171, 173-175, 177, 179-305, 307-315, 326, 328, 330, 332-335, 340-375, 381, 382 or 384-472; (b) sequences that hybridize to any of the foregoing sequences under moderately stringent conditions; and (c) complements of any of the sequence of (a) or (b). In certain specific embodiments, such a polypeptide comprises at least a portion, or variant thereof, of a tumor protein that includes an amino acid sequence selected from the group consisting of sequences recited in any one of SEQ ID NO: 112-114, 172, 176, 178, 327, 329, 331, 336, 339, 376-380 and 383.

The present invention further provides polynucleotides that encode a polypeptide as described above, or a portion thereof (such as a portion encoding at least 15 amino acid residues of a prostate tumor protein), expression vectors comprising such polynucleotides and host cells transformed or transfected with such expression vectors.

Within other aspects, the present invention provides pharmaceutical compositions comprising a polypeptide or polynucleotide as described above and a physiologically acceptable carrier.

Within a related aspect of the present invention, vaccines are provided. Such vaccines comprise a polypeptide or polynucleotide as described above and a non-specific immune response enhancer.

The present invention further provides pharmaceutical compositions that comprise: (a) an antibody or antigen-binding fragment thereof that specifically binds to a prostate tumor protein; and (b) a physiologically acceptable carrier.

Within further aspects, the present invention provides pharmaceutical compositions comprising: (a) an antigen presenting cell that expresses a polypeptide as described above and (b) a pharmaceutically acceptable carrier or excipient. Antigen presenting cells include dendritic cells, macrophages, monocytes, fibroblasts and B cells.

Within related aspects, vaccines are provided that comprise: (a) an antigen presenting cell that expresses a polypeptide as described above and (b) a non-specific immune response enhancer.

The present invention further provides, in other aspects, fusion proteins that comprise at least one polypeptide as described above, as well as polynucleotides encoding such fusion proteins.

Within related aspects, pharmaceutical compositions comprising a fusion protein, or a polynucleotide encoding a fusion protein, in combination with a physiologically acceptable carrier are provided.

Vaccines are further provided, within other aspects, that comprise a fusion protein, or a polynucleotide encoding a fusion protein, in combination with a non-specific immune response enhancer.

Within further aspects, the present invention provides methods for inhibiting the development of a cancer in a patient, comprising administering to a patient a pharmaceutical composition or vaccine as recited above.

The present invention further provides, within other aspects, methods for removing tumor cells from a biological sample, comprising contacting a biological sample with T cells that specifically react with a prostate tumor protein, wherein the step of contacting is performed under conditions and for a time sufficient to permit the removal of cells expressing the protein from the sample.

Within related aspects, methods are provided for inhibiting the development of a cancer in a patient, comprising administering to a patient a biological sample treated as described above.

Methods are further provided, within other aspects, for stimulating and/or expanding T cells specific for a prostate tumor protein, comprising contacting T cells with one or more of: (i) a polypeptide as described above; (ii) a polypucleotide encoding such a polypeptide; and/or (iii) an antigen presenting cell that expresses such a polypeptide; under conditions and for a time sufficient to permit the stimulation and/or expansion of T cells. Isolated T cell populations comprising T cells prepared as described above are also provided.

Within further aspects, the present invention provides methods for inhibiting the development of a cancer in a patient, comprising administering to a patient an effective amount of a T cell population as described above.

The present invention further provides methods for inhibiting the development of a cancer in a patient, comprising the steps of: (a) incubating CD4⁺ and/or CD8⁺ T cells isolated from a patient with one or more of: (i) a polypeptide comprising at least an immunogenic portion of a prostate tumor protein; (ii) a polynucleotide encoding such a polypeptide; and (iii) an antigen-presenting cell that expressed such a polypeptide; and (b) administering to the patient an effective amount of the proliferated T cells, and thereby inhibiting the development of a cancer in the patient. Proliferated cells may, but need not, be cloned prior to administration to the patient.

Within further aspects, the present invention provides methods for determining the presence or absence of a cancer in a patient, comprising: (a) contacting a biological sample obtained from a patient with a binding agent that binds to a polypeptide as recited above; (b) detecting in the sample an amount of polypeptide that binds to the binding agent; and (c) comparing the amount of polypeptide with a predetermined cut-off value, and therefrom determining the presence or absence of a cancer in the patient. Within preferred embodiments, the binding agent is an antibody, more preferably a monoclonal antibody. The cancer may be prostate cancer.

The present invention also provides, within other aspects, methods for monitoring the progression of a cancer in a patient. Such methods comprise the steps of: (a) contacting a biological sample obtained from a patient at a first point in time with a binding agent that binds to a polypeptide as recited above; (b) detecting in the sample an amount of polypeptide that binds to the binding agent; (c) repeating steps (a) and (b) using a biological sample obtained from the patient at a subsequent point in time; and (d) comparing the amount of polypeptide detected in step (c) with the amount detected in step (b) and therefrom monitoring the progression of the cancer in the patient.

The present invention further provides, within other aspects, methods for determining the presence or absence of a cancer in a patient, comprising the steps of: (a) contacting a biological sample obtained from a patient with an oligonucleotide that hybridizes to a polynucleotide that encodes a prostate tumor protein; (b) detecting in the sample a level of a polynucleotide, preferably mRNA, that hybridizes to the oligonucleotide; and (c) comparing the level of polynucleotide that hybridizes to the oligonucleotide with a predetermined cut-off value, and therefrom determining the presence or absence of a cancer in the patient. Within certain embodiments, the amount of mRNA is detected via polymerase chain reaction using, for example, at least one oligonucleotide primer that hybridizes to a polynucleotide encoding a polypeptide as recited above, or a complement of such a polynucleotide. Within other embodiments, the amount of mRNA is detected using a hybridization technique, employing an oligonucleotide probe that hybridizes to a polynucleotide that encodes a polypeptide as recited above, or a complement of such a polynucleotide that encodes a polypeptide as recited above, or a complement of such a polynucleotide.

In related aspects, methods are provided for monitoring the progression of a cancer in a patient, comprising the steps of: (a) contacting a biological sample obtained from a patient with an oligonucleotide that hybridizes to a polynucleotide that encodes a prostate tumor protein; (b) detecting in the sample an amount of a polynucleotide that hybridizes to the oligonucleotide; (c) repeating steps (a) and (b) using a biological sample obtained from the patient at a subsequent point in time; and (d) comparing the amount of polynucleotide detected in step (c) with the amount detected in step (b) and therefrom monitoring the progression of the cancer in the patient.

Within further aspects, the present invention provides antibodies, such as monoclonal antibodies, that bind to a polypeptide as described above, as well as diagnostic

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kits comprising such antibodies. Diagnostic kits comprising one or more oligonucleotide probes or primers as described above are also provided.

These and other aspects of the present invention will become apparent upon reference to the following detailed description and attached drawings. All references disclosed herein are hereby incorporated by reference in their entirety as if each was incorporated individually.

BRIEF DESCRIPTION OF THE DRAWINGS AND SEQUENCE IDENTIFIERS

Figure 1 illustrates the ability of T cells to kill fibroblasts expressing the representative prostate tumor polypeptide P502S, as compared to control fibroblasts. The percentage lysis is shown as a series of effector:target ratios, as indicated.

Figures 2A and 2B illustrate the ability of T cells to recognize cells expressing the representative prostate tumor polypeptide P502S. In each case, the number of γ -interferon spots is shown for different numbers of responders. In Figure 2A, data is presented for fibroblasts pulsed with the P2S-12 peptide, as compared to fibroblasts pulsed with a control E75 peptide. In Figure 2B, data is presented for fibroblasts expressing P502S, as compared to fibroblasts expressing HER-2/neu.

Figure 3 represents a peptide competition binding assay showing that the P1S#10 peptide, derived from P501S, binds HLA-A2. Peptide P1S#10 inhibits HLA-A2 restricted presentation of fluM58 peptide to CTL clone D150M58 in TNF release bioassay. D150M58 CTL is specific for the HLA-A2 binding influenza matrix peptide fluM58.

Figure 4 illustrates the ability of T cell lines generated from P1S#10 immunized mice to specifically lyse P1S#10-pulsed Jurkat A2Kb targets and P501S-transduced Jurkat A2Kb targets, as compared to EGFP-transduced Jurkat A2Kb. The percent lysis is shown as a series of effector to target ratios, as indicated.

Figure 5 illustrates the ability of a T cell clone to recognize and specifically lyse Jurkat A2Kb cells expressing the representative prostate tumor polypeptide P501S, thereby demonstrating that the P1S#10 peptide may be a naturally processed epitope of the P501S polypeptide.

Figures 6A and 6B are graphs illustrating the specificity of a CD8⁺ cell line (3A-1) for a representative prostate tumor antigen (P501S). Figure 6A shows the results of a ⁵¹Cr release assay. The percent specific lysis is shown as a series of effector:target ratios, as indicated. Figure 6B shows the production of interferon-gamma by 3A-1 cells stimulated with autologous B-LCL transduced with P501S, at varying effector:target rations as indicated.

SEQ ID NO: 1 is the determined cDNA sequence for F1-13 SEQ ID NO: 2 is the determined 3' cDNA sequence for F1-12

SEQ ID NO: 3 is the determined 5' cDNA sequence for F1-12
SEQ ID NO: 4 is the determined 3' cDNA sequence for F1-16
SEQ ID NO: 5 is the determined 3' cDNA sequence for H1-1
SEQ ID NO: 6 is the determined 3' cDNA sequence for H1-9
SEQ ID NO: 7 is the determined 3' cDNA sequence for H1-4
SEQ ID NO: 8 is the determined 3' cDNA sequence for J1-17
SEQ ID NO: 9 is the determined 5' cDNA sequence for J1-17
SEQ ID NO: 10 is the determined 3' cDNA sequence for L1-12
SEQ ID NO: 11 is the determined 5' cDNA sequence for L1-12
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SEQ ID NO: 25 is the determined 3' cDNA sequence for K1-63
SEQ ID NO: 26 is the determined 5' cDNA sequence for L1-4
SEQ ID NO: 27 is the determined 3' cDNA sequence for L1-4
SEQ ID NO: 28 is the determined 5' cDNA sequence for L1-14
SEQ ID NO: 29 is the determined 3' cDNA sequence for L1-14
SEQ ID NO: 30 is the determined 3' cDNA sequence for J1-12
SEQ ID NO: 31 is the determined 3' cDNA sequence for J1-16
SEQ ID NO: 32 is the determined 3' cDNA sequence for J1-21
SEQ ID NO: 33 is the determined 3' cDNA sequence for K1-48
SEQ ID NO: 34 is the determined 3' cDNA sequence for K1-55
SEQ ID NO: 35 is the determined 3' cDNA sequence for L1-2
SEQ ID NO: 36 is the determined 3' cDNA sequence for L1-6
SEQ ID NO: 37 is the determined 3' cDNA sequence for N1-1858
SEQ ID NO: 38 is the determined 3' cDNA sequence for N1-1860
SEQ ID NO: 39 is the determined 3' cDNA sequence for N1-1861

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SEQ ID NO: 75 is the determined cDNA sequence for 1B-3976
SEQ ID NO: 76 is the determined cDNA sequence for V1-3679

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SEQ ID NO: 173 is the determined cDNA sequence for P703P-DE2
SEQ ID NO: 174 is the determined cDNA sequence for P703P-DE6
SEQ ID NO: 175 is the determined cDNA sequence for P703P-DE13
SEQ ID NO: 176 is the predicted amino acid sequence for P703P-DE13
SEQ ID NO: 177 is the determined cDNA sequence for P703P-DE14
SEQ ID NO: 178 is the predicted amino acid sequence for P703P-DE14
SEQ ID NO: 179 is the determined extended cDNA sequence for 1G-4736
SEQ ID NO: 180 is the determined extended cDNA sequence for 1G-4738
SEQ ID NO: 181 is the determined extended cDNA sequence for 1G-474
SEQ ID NO: 182 is the determined extended cDNA sequence for 1G-4744
SEQ ID NO: 183 is the determined extended cDNA sequence for 1H-4774
SEQ ID NO: 184 is the determined extended cDNA sequence for 1H-478
SEQ ID NO: 185 is the determined extended cDNA sequence for 1H-478
SEQ ID NO: 186 is the determined extended cDNA sequence for 1H-478?

SEQ ID NO: 187 is the determined extended cDNA sequence for 1H-4796 SEQ ID NO: 188 is the determined extended cDNA sequence for 1I-4807 SEQ ID NO: 189 is the determined 3' cDNA sequence for 1I-4810 SEQ ID NO: 190 is the determined 3' cDNA sequence for 1I-4811 SEQ ID NO: 191 is the determined extended cDNA sequence for 1J-4876 SEQ ID NO: 192 is the determined extended cDNA sequence for 1K-4884 SEQ ID NO: 193 is the determined extended cDNA sequence for 1K-4896 SEQ ID NO: 194 is the determined extended cDNA sequence for 1G-4761 SEQ ID NO: 195 is the determined extended cDNA sequence for 1G-4762 SEQ ID NO: 196 is the determined extended cDNA sequence for 1H-4766 SEQ ID NO: 197 is the determined 3' cDNA sequence for 1H-4770 SEQ ID NO: 198 is the determined 3' cDNA sequence for 1H-4771 SEQ ID NO: 199 is the determined extended cDNA sequence for 1H-4772 SEQ ID NO: 200 is the determined extended cDNA sequence for 1D-4309 SEQ ID NO: 201 is the determined extended cDNA sequence for 1D.1-4278 SEQ ID NO: 202 is the determined extended cDNA sequence for 1D-4288 SEQ ID NO: 203 is the determined extended cDNA sequence for 1D-4283 SEQ ID NO: 204 is the determined extended cDNA sequence for 1D-4304 SEQ ID NO: 205 is the determined extended cDNA sequence for 1D-4296 SEQ ID NO: 206 is the determined extended cDNA sequence for 1D-4280 SEQ ID NO: 207 is the determined cDNA sequence for 10-d8fwd SEQ ID NO: 208 is the determined cDNA sequence for 10-H10con SEQ ID NO: 209 is the determined cDNA sequence for 11-C8rev SEQ ID NO: 210 is the determined cDNA sequence for 7.g6fwd SEQ ID NO: 211 is the determined cDNA sequence for 7.g6rev SEQ ID NO: 212 is the determined cDNA sequence for 8-b5fwd SEQ ID NO: 213 is the determined cDNA sequence for 8-b5rev SEQ ID NO: 214 is the determined cDNA sequence for 8-b6fwd SEQ ID NO: 215 is the determined cDNA sequence for 8-b6 rev SEQ ID NO: 216 is the determined cDNA sequence for 8-d4fwd SEQ ID NO: 217 is the determined cDNA sequence for 8-d9rev SEQ ID NO: 218 is the determined cDNA sequence for 8-g3fwd SEQ ID NO: 219 is the determined cDNA sequence for 8-g3rev SEQ ID NO: 220 is the determined cDNA sequence for 8-h11rev SEQ ID NO: 221 is the determined cDNA sequence for g-f12fwd SEQ ID NO: 222 is the determined cDNA sequence for g-f3rev SEQ ID NO: 223 is the determined cDNA sequence for P509S

SEQ ID NO: 224 is the determined cDNA sequence for P510S
SEQ ID NO: 225 is the determined cDNA sequence for P703DE5
SEQ ID NO: 226 is the determined cDNA sequence for 9-A11
SEQ ID NO: 227 is the determined cDNA sequence for 8-C6
SEQ ID NO: 228 is the determined cDNA sequence for 8-H7
SEQ ID NO: 229 is the determined cDNA sequence for JPTPN13
SEQ ID NO: 230 is the determined cDNA sequence for JPTPN14
SEQ ID NO: 231 is the determined cDNA sequence for JPTPN23
SEQ ID NO: 232 is the determined cDNA sequence for JPTPN24
SEQ ID NO: 233 is the determined cDNA sequence for JPTPN25
SEQ ID NO: 234 is the determined cDNA sequence for JPTPN30
SEQ ID NO: 235 is the determined cDNA sequence for JPTPN34
SEQ ID NO: 236 is the determined cDNA sequence for PTPN35
SEQ ID NO: 237 is the determined cDNA sequence for JPTPN36
SEQ ID NO: 238 is the determined cDNA sequence for JPTPN38
SEQ ID NO: 239 is the determined cDNA sequence for JPTPN39
SEQ ID NO: 240 is the determined cDNA sequence for JPTPN40
SEQ ID NO: 241 is the determined cDNA sequence for JPTPN41
SEQ ID NO: 242 is the determined cDNA sequence for JPTPN42
SEQ ID NO: 243 is the determined cDNA sequence for JPTPN45
SEQ ID NO: 244 is the determined cDNA sequence for JPTPN46
SEQ ID NO: 245 is the determined cDNA sequence for JPTPN51
SEQ ID NO: 246 is the determined cDNA sequence for JPTPN56
SEQ ID NO: 247 is the determined cDNA sequence for PTPN64
SEQ ID NO: 248 is the determined cDNA sequence for JPTPN65
SEQ ID NO: 249 is the determined cDNA sequence for JPTPN67
SEQ ID NO: 250 is the determined cDNA sequence for JPTPN76
SEQ ID NO: 251 is the determined cDNA sequence for JPTPN84
SEQ ID NO: 252 is the determined cDNA sequence for JPTPN85
SEQ ID NO: 253 is the determined cDNA sequence for JPTPN86
SEQ ID NO: 254 is the determined cDNA sequence for JPTPN87
SEQ ID NO: 255 is the determined cDNA sequence for JPTPN88
SEQ ID NO: 256 is the determined cDNA sequence for JP1F1
SEQ ID NO: 257 is the determined cDNA sequence for JP1F2
SEQ ID NO: 258 is the determined cDNA sequence for JP1C2
SEQ ID NO: 259 is the determined cDNA sequence for JP1B1
SEQ ID NO: 260 is the determined cDNA sequence for JP1B2

SEQ ID NO: 201 is the determined cDNA sequence for JPID3
SEQ ID NO: 262 is the determined cDNA sequence for JP1A4
SEQ ID NO: 263 is the determined cDNA sequence for JP1F5
SEQ ID NO: 264 is the determined cDNA sequence for JP1E6
SEQ ID NO: 265 is the determined cDNA sequence for JP1D6
SEQ ID NO: 266 is the determined cDNA sequence for JP1B5
SEQ ID NO: 267 is the determined cDNA sequence for JP1A6
SEQ ID NO: 268 is the determined cDNA sequence for JP1E8
SEQ ID NO: 269 is the determined cDNA sequence for JP1D7
SEQ ID NO: 270 is the determined cDNA sequence for JP1D9
SEQ ID NO: 271 is the determined cDNA sequence for JP1C10
SEQ ID NO: 272 is the determined cDNA sequence for JP1A9
SEQ ID NO: 273 is the determined cDNA sequence for JP1F12
SEQ ID NO: 274 is the determined cDNA sequence for JP1E12
SEQ ID NO: 275 is the determined cDNA sequence for JP1D11
SEQ ID NO: 276 is the determined cDNA sequence for JP1C11
SEQ ID NO: 277 is the determined cDNA sequence for JP1C12
SEQ ID NO: 278 is the determined cDNA sequence for JP1B12
SEQ ID NO: 279 is the determined cDNA sequence for JP1A12
SEQ ID NO: 280 is the determined cDNA sequence for JP8G2
SEQ ID NO: 281 is the determined cDNA sequence for JP8H1
SEQ ID NO: 282 is the determined cDNA sequence for JP8H2
SEQ ID NO: 283 is the determined cDNA sequence for JP8A3
SEQ ID NO: 284 is the determined cDNA sequence for JP8A4
SEQ ID NO: 285 is the determined cDNA sequence for JP8C3
SEQ ID NO: 286 is the determined cDNA sequence for JP8G4
SEQ ID NO: 287 is the determined cDNA sequence for JP8B6
SEQ ID NO: 288 is the determined cDNA sequence for JP8D6
SEQ ID NO: 289 is the determined cDNA sequence for JP8F5
SEQ ID NO: 290 is the determined cDNA sequence for JP8A8
SEQ ID NO: 291 is the determined cDNA sequence for JP8C7
SEQ ID NO: 292 is the determined cDNA sequence for JP8D7
SEQ ID NO: 293 is the determined cDNA sequence for P8D8
SEQ ID NO: 294 is the determined cDNA sequence for JP8E7
SEQ ID NO: 295 is the determined cDNA sequence for JP8F8
SEQ ID NO: 296 is the determined cDNA sequence for JP8G8
SEQ ID NO: 297 is the determined cDNA sequence for JP8B10

SEQ ID NO: 298 is the determined cDNA sequence for JP8C10 SEQ ID NO: 299 is the determined cDNA sequence for JP8E9 SEQ ID NO: 300 is the determined cDNA sequence for JP8E10 SEQ ID NO: 301 is the determined cDNA sequence for JP8F9 SEQ ID NO: 302 is the determined cDNA sequence for JP8H9 SEQ ID NO: 303 is the determined cDNA sequence for JP8C12 SEQ ID NO: 304 is the determined cDNA sequence for JP8E11 SEQ ID NO: 305 is the determined cDNA sequence for JP8E12 SEQ ID NO: 306 is the amino acid sequence for the peptide PS2#12 SEQ ID NO: 307 is the determined cDNA sequence for P711P SEQ ID NO: 308 is the determined cDNA sequence for P712P SEQ ID NO: 309 is the determined cDNA sequence for CLONE23 SEQ ID NO: 310 is the determined cDNA sequence for P774P SEQ ID NO: 311 is the determined cDNA sequence for P775P SEQ ID NO: 312 is the determined cDNA sequence for P715P SEQ ID NO: 313 is the determined cDNA sequence for P710P SEQ ID NO: 314 is the determined cDNA sequence for P767P SEQ ID NO: 315 is the determined cDNA sequence for P768P SEQ ID NO: 316-325 are the determined cDNA sequences of previously isolated genes SEQ ID NO: 326 is the determined cDNA sequence for P703PDE5 SEQ ID NO: 327 is the predicted amino acid sequence for P703PDE5 SEQ ID NO: 328 is the determined cDNA sequence for P703P6.26 SEQ ID NO: 329 is the predicted amino acid sequence for P703P6.26 SEQ ID NO: 330 is the determined cDNA sequence for P703PX-23 SEQ ID NO: 331 is the predicted amino acid sequence for P703PX-23 SEQ ID NO: 332 is the determined full length cDNA sequence for P509S SEQ ID NO: 333 is the determined extended cDNA sequence for P707P (also referred to as 11-C9) SEQ ID NO: 334 is the determined cDNA sequence for P714P SEQ ID NO: 335 is the determined cDNA sequence for P705P (also referred to as 9-F3) SEQ ID NO: 336 is the predicted amino acid sequence for P705P SEQ ID NO: 337 is the amino acid sequence of the peptide P1S#10 SEQ ID NO: 338 is the amino acid sequence of the peptide p5 SEQ ID NO: 339 is the predicted amino acid sequence of P509S SEQ ID NO: 340 is the determined cDNA sequence for P778P SEQ ID NO: 341 is the determined cDNA sequence for P786P SEQ ID NO: 342 is the determined cDNA sequence for P789P

SEQ ID NO: 343 is the determined cDNA sequence for a clone showing homology to Homo sapiens MM46 mRNA

SEQ ID NO: 344 is the determined cDNA sequence for a clone showing homology to Homo sapiens TNF-alpha stimulated ABC protein (ABC50) mRNA

SEQ ID NO: 345 is the determined cDNA sequence for a clone showing homology to Homo sapiens mRNA for E-cadherin

SEQ ID NO: 346 is the determined cDNA sequence for a clone showing homology to Human nuclear-encoded mitochondrial serine hydroxymethyltransferase (SHMT)

SEQ ID NO: 347 is the determined cDNA sequence for a clone showing homology to Homo sapiens natural resistance-associated macrophage protein2 (NRAMP2)

SEQ ID NO: 348 is the determined cDNA sequence for a clone showing homology to Homo sapiens phosphoglucomutase-related protein (PGMRP)

SEQ ID NO: 349 is the determined cDNA sequence for a clone showing homology to Human mRNA for proteosome subunit p40

SEQ ID NO: 350 is the determined cDNA sequence for P777P

SEQ ID NO: 351 is the determined cDNA sequence for P779P

SEQ ID NO: 352 is the determined cDNA sequence for P790P

SEQ ID NO: 353 is the determined cDNA sequence for P784P

SEQ ID NO: 354 is the determined cDNA sequence for P776P

SEQ ID NO: 355 is the determined cDNA sequence for P780P

SEQ ID NO: 356 is the determined cDNA sequence for P544S

SEQ ID NO: 357 is the determined cDNA sequence for P745S

SEQ ID NO: 358 is the determined cDNA sequence for P782P

SEQ ID NO: 359 is the determined cDNA sequence for P783P

SEQ ID NO: 360 is the determined cDNA sequence for unknown 17984

SEQ ID NO: 361 is the determined cDNA sequence for P787P

SEQ ID NO: 362 is the determined cDNA sequence for P788P

SEQ ID NO: 363 is the determined cDNA sequence for unknown 17994

SEQ ID NO: 364 is the determined cDNA sequence for P781P

SEQ ID NO: 365 is the determined cDNA sequence for P785P

SEQ ID NO: 366-375 are the determined cDNA sequences for splice variants of B305D.

SEQ ID NO: 376 is the predicted amino acid sequence encoded by the sequence of SEQ ID NO: 366.

SEQ ID NO: 377 is the predicted amino acid sequence encoded by the sequence of SEQ ID NO: 372.

SEQ ID NO: 378 is the predicted amino acid sequence encoded by the sequence of SEQ ID NO: 373.

SEQ ID NO: 379 is the predicted amino acid sequence encoded by the sequence of SEQ ID

NO: 374.

SEQ ID NO: 380 is the predicted amino acid sequence encoded by the sequence of SEQ ID

NO: 375.

SEQ ID NO: 381 is the determined cDNA sequence for B716P.

SEQ ID NO: 382 is the determined full-length cDNA sequence for P711P.

SEQ ID NO: 383 is the predicted amino acid sequence for P711P.

SEQ ID NO: 384 is the cDNA sequence for P1000C.

SEQ ID NO: 385 is the cDNA sequence for CGI-82.

SEQ ID NO:386 is the cDNA sequence for 23320.

SEQ ID NO:387 is the cDNA sequence for CGI-69.

SEQ ID NO:388 is the cDNA sequence for L-iditol-2-dehydrogenase.

SEQ ID NO:389 is the cDNA sequence for 23379.

SEQ ID NO:390 is the cDNA sequence for 23381.

SEQ ID NO:391 is the cDNA sequence for KIAA0122.

SEQ ID NO:392 is the cDNA sequence for 23399.

SEQ ID NO:393 is the cDNA sequence for a previously identified gene.

SEQ ID NO:394 is the cDNA sequence for HCLBP.

SEQ ID NO:395 is the cDNA sequence for transglutaminase.

SEQ ID NO:396 is the cDNA sequence for a previously identified gene.

SEQ ID NO:397 is the cDNA sequence for PAP.

SEQ ID NO:398 is the cDNA sequence for Ets transcription factor PDEF.

SEQ ID NO:399 is the cDNA sequence for hTGR.

SEQ ID NO:400 is the cDNA sequence for KIAA0295.

SEQ ID NO:401 is the cDNA sequence for 22545.

SEQ ID NO:402 is the cDNA sequence for 22547.

SEQ ID NO:403 is the cDNA sequence for 22548.

SEQ ID NO:404 is the cDNA sequence for 22550.

SEQ ID NO:405 is the cDNA sequence for 22551. SEQ ID NO:406 is the cDNA sequence for 22552.

SEQ ID NO:407 is the cDNA sequence for 22553.

SEQ ID NO:408 is the cDNA sequence for 22558.

SEQ ID NO:409 is the cDNA sequence for 22562.

SEQ ID NO:410 is the cDNA sequence for 22565.

SEQ ID NO:411 is the cDNA sequence for 22567.

SEQ ID NO:412 is the cDNA sequence for 22568.

SEQ ID NO:413 is the cDNA sequence for 22570.

SEQ ID NO:414 is the cDNA sequence for 22571. SEQ ID NO:415 is the cDNA sequence for 22572. SEQ ID NO:416 is the cDNA sequence for 22573. SEQ ID NO:417 is the cDNA sequence for 22573. SEQ ID NO:418 is the cDNA sequence for 22575. SEQ ID NO:419 is the cDNA sequence for 22580. SEQ ID NO:420 is the cDNA sequence for 22581. SEQ ID NO:421 is the cDNA sequence for 22582. SEQ ID NO:422 is the cDNA sequence for 22583. SEQ ID NO:423 is the cDNA sequence for 22584. SEQ ID NO:424 is the cDNA sequence for 22585. SEQ ID NO:425 is the cDNA sequence for 22586. SEQ ID NO:426 is the cDNA sequence for 22587. SEQ ID NO:427 is the cDNA sequence for 22588. SEQ ID NO:428 is the cDNA sequence for 22589. SEQ ID NO:429 is the cDNA sequence for 22590. SEQ ID NO:430 is the cDNA sequence for 22591. SEQ ID NO:431 is the cDNA sequence for 22592. SEQ ID NO:432 is the cDNA sequence for 22593. SEQ ID NO:433 is the cDNA sequence for 22594. SEQ ID NO:434 is the cDNA sequence for 22595. SEQ ID NO:435 is the cDNA sequence for 22596. SEQ ID NO:436 is the cDNA sequence for 22847. SEQ ID NO:437 is the cDNA sequence for 22848. SEQ ID NO:438 is the cDNA sequence for 22849. SEQ ID NO:439 is the cDNA sequence for 22851. SEQ ID NO:440 is the cDNA sequence for 22852. SEQ ID NO:441 is the cDNA sequence for 22853. SEQ ID NO:442 is the cDNA sequence for 22854. SEQ ID NO:443 is the cDNA sequence for 22855. SEQ ID NO:444 is the cDNA sequence for 22856. SEQ ID NO:445 is the cDNA sequence for 22857. SEQ ID NO:446 is the cDNA sequence for 23601. SEQ ID NO:447 is the cDNA sequence for 23602. SEQ ID NO:448 is the cDNA sequence for 23605. SEQ ID NO:449 is the cDNA sequence for 23606. SEQ ID NO:450 is the cDNA sequence for 23612.

SEQ ID NO:451 is the cDNA sequence for 23614.

SEQ ID NO:452 is the cDNA sequence for 23618.

SEQ ID NO:453 is the cDNA sequence for 23622.

SEQ ID NO:454 is the cDNA sequence for folate hydrolase.

SEQ ID NO:455 is the cDNA sequence for LIM protein.

SEQ ID NO:456 is the cDNA sequence for a known gene.

SEQ ID NO:457 is the cDNA sequence for a known gene.

SEQ ID NO:458 is the cDNA sequence for a previously identified gene.

SEQ ID NO:459 is the cDNA sequence for 23045.

SEQ ID NO:460 is the cDNA sequence for 23032.

SEQ ID NO:461 is the cDNA sequence for 23054.

SEQ ID NOs:462-467 are cDNA sequences for known genes.

SEQ ID NOs:468-471 are cDNA sequences for P710P.

SEQ ID NO:472 is a cDNA sequence for P1001C.

DETAILED DESCRIPTION OF THE INVENTION

As noted above, the present invention is generally directed to compositions and methods for the therapy and diagnosis of cancer, such as prostate cancer. The compositions described herein may include prostate tumor polypeptides, polynucleotides encoding such polypeptides, binding agents such as antibodies, antigen presenting cells (APCs) and/or immune system cells (e.g., T cells). Polypeptides of the present invention generally comprise at least a portion (such as an immunogenic portion) of a prostate tumor protein or a variant thereof. A "prostate tumor protein" is a protein that is expressed in prostate tumor cells at a level that is at least two fold, and preferably at least five fold, greater than the level of expression in a normal tissue, as determined using a representative assay provided herein. Certain prostate tumor proteins are tumor proteins that react detectably (within an immunoassay, such as an ELISA or Western blot) with antisera of a patient afflicted with prostate cancer. Polynucleotides of the subject invention generally comprise a DNA or RNA sequence that encodes all or a portion of such a polypeptide, or that is complementary to such a sequence. Antibodies are generally immune system proteins, or antigen-binding fragments thereof, that are capable of binding to a polypeptide as described above. Antigen presenting cells include dendritic cells, macrophages, monocytes, fibroblasts and B-cells that express a polypeptide as described above. T cells that may be employed within such compositions are generally T cells that are specific for a polypeptide as described above.

The present invention is based on the discovery of human prostate tumor proteins. Sequences of polynucleotides encoding certain tumor proteins, or portions thereof, are provided in SEQ ID NOs:1-111, 115-171, 173-175, 177, 179-305, 307-315, 326, 328, 330, 332-335, 340-375, 381, 382 or 384-472. Sequences of polypeptides comprising at least a portion of a tumor protein are provided in SEQ ID NOs:112-114, 172, 176, 178, 327, 329, 331, 336, 339, 376-380 and 383.

PROSTATE TUMOR PROTEIN POLYNUCLEOTIDES

Any polynucleotide that encodes a prostate tumor protein or a portion or other variant thereof as described herein is encompassed by the present invention. Preferred polynucleotides comprise at least 15 consecutive nucleotides, preferably at least 30 consecutive nucleotides and more preferably at least 45 consecutive nucleotides, that encode a portion of a prostate tumor protein. More preferably, a polynucleotide encodes an immunogenic portion of a prostate tumor protein. Polynucleotides complementary to any such sequences are also encompassed by the present invention. Polynucleotides may be single-stranded (coding or antisense) or double-stranded, and may be DNA (genomic, cDNA or synthetic) or RNA molecules. RNA molecules include HnRNA molecules, which contain introns and correspond to a DNA molecule in a one-to-one manner, and mRNA molecules, which do not contain introns. Additional coding or non-coding sequences may, but need not, be present within a polynucleotide of the present invention, and a polynucleotide may, but need not, be linked to other molecules and/or support materials.

Polynucleotides may comprise a native sequence (i.e., an endogenous sequence that encodes a prostate tumor protein or a portion thereof) or may comprise a variant of such a sequence. Polynucleotide variants may contain one or more substitutions, additions, deletions and/or insertions such that the immunogenicity of the encoded polypeptide is not diminished, relative to a native tumor protein. The effect on the immunogenicity of the encoded polypeptide may generally be assessed as described herein. Variants preferably exhibit at least about 70% identity, more preferably at least about 80% identity and most preferably at least about 90% identity to a polynucleotide sequence that encodes a native prostate tumor protein or a portion thereof.

Two polynucleotide or polypeptide sequences are said to be "identical" if the sequence of nucleotides or amino acids in the two sequences is the same when aligned for maximum correspondence as described below. Comparisons between two sequences are typically performed by comparing the sequences over a comparison window to identify and compare local regions of sequence similarity. A "comparison window" as used herein, refers to a segment of at least about 20 contiguous positions, usually 30 to about 75, 40 to about 50,

in which a sequence may be compared to a reference sequence of the same number of contiguous positions after the two sequences are optimally aligned.

Optimal alignment of sequences for comparison may be conducted using the Megalign program in the Lasergene suite of bioinformatics software (DNASTAR, Inc., Madison, WI), using default parameters. This program embodies several alignment schemes described in the following references: Dayhoff, M.O. (1978) A model of evolutionary change in proteins – Matrices for detecting distant relationships. In Dayhoff, M.O. (ed.) Atlas of Protein Sequence and Structure, National Biomedical Research Foundation, Washington DC Vol. 5, Suppl. 3, pp. 345-358; Hein J. (1990) Unified Approach to Alignment and Phylogenes pp. 626-645 Methods in Enzymology vol. 183, Academic Press, Inc., San Diego, CA; Higgins, D.G. and Sharp, P.M. (1989) CABIOS 5:151-153; Myers, E.W. and Muller W. (1988) CABIOS 4:11-17; Robinson, E.D. (1971) Comb. Theor 11:105; Santou, N. Nes, M. (1987) Mol. Biol. Evol. 4:406-425; Sneath, P.H.A. and Sokal, R.R. (1973) Numerical Taxonomy – the Principles and Practice of Numerical Taxonomy, Freeman Press, San Francisco, CA; Wilbur, W.J. and Lipman, D.J. (1983) Proc. Natl. Acad., Sci. USA 80:726-730.

Preferably, the "percentage of sequence identity" is determined by comparing two optimally aligned sequences over a window of comparison of at least 20 positions, wherein the portion of the polynucleotide or polypeptide sequence in the comparison window may comprise additions or deletions (i.e., gaps) of 20 percent or less, usually 5 to 15 percent, or 10 to 12 percent, as compared to the reference sequences (which does not comprise additions or deletions) for optimal alignment of the two sequences. The percentage is calculated by determining the number of positions at which the identical nucleic acid bases or amino acid residue occurs in both sequences to yield the number of matched positions, dividing the number of matched positions by the total number of positions in the reference sequence (i.e., the window size) and multiplying the results by 100 to yield the percentage of sequence identity.

Variants may also, or alternatively, be substantially homologous to a native gene, or a portion or complement thereof. Such polynucleotide variants are capable of hybridizing under moderately stringent conditions to a naturally occurring DNA sequence encoding a native prostate tumor protein (or a complementary sequence). Suitable moderately stringent conditions include prewashing in a solution of 5 X SSC, 0.5% SDS, 1.0 mM EDTA (pH 8.0); hybridizing at 50°C-65°C, 5 X SSC, overnight; followed by washing twice at 65°C for 20 minutes with each of 2X, 0.5X and 0.2X SSC containing 0.1% SDS.

It will be appreciated by those of ordinary skill in the art that, as a result of the degeneracy of the genetic code, there are many nucleotide sequences that encode a polypeptide as described herein. Some of these polynucleotides bear minimal homology to

the nucleotide sequence of any native gene. Nonetheless, polynucleotides that vary due to differences in codon usage are specifically contemplated by the present invention. Further, alleles of the genes comprising the polynucleotide sequences provided herein are within the scope of the present invention. Alleles are endogenous genes that are altered as a result of one or more mutations, such as deletions, additions and/or substitutions of nucleotides. The resulting mRNA and protein may, but need not, have an altered structure or function. Alleles may be identified using standard techniques (such as hybridization, amplification and/or database sequence comparison).

Polynucleotides may be prepared using any of a variety of techniques. For example, a polynucleotide may be identified, as described in more detail below, by screening a microarray of cDNAs for tumor-associated expression (i.e., expression that is at least five fold greater in a prostate tumor than in normal tissue, as determined using a representative assay provided herein). Such screens may be performed using a Synteni microarray (Palo Alto, CA) according to the manufacturer's instructions (and essentially as described by Schena et al., *Proc. Natl. Acad. Sci. USA 93*:10614-10619, 1996 and Heller et al., *Proc. Natl. Acad. Sci. USA 93*:10614-10619, polypeptides may be amplified from cDNA prepared from cells expressing the proteins described herein, such as prostate tumor cells. Such polynucleotides may be amplified via polymerase chain reaction (PCR). For this approach, sequence-specific primers may be designed based on the sequences provided herein, and may be purchased or synthesized.

An amplified portion may be used to isolate a full length gene from a suitable library (e.g., a prostate tumor cDNA library) using well known techniques. Within such techniques, a library (cDNA or genomic) is screened using one or more polynucleotide probes or primers suitable for amplification. Preferably, a library is size-selected to include larger molecules. Random primed libraries may also be preferred for identifying 5' and upstream regions of genes. Genomic libraries are preferred for obtaining introns and extending 5' sequences.

For hybridization techniques, a partial sequence may be labeled (e.g., by nick-translation or end-labeling with ³²P) using well known techniques. A bacterial or bacteriophage library is then screened by hybridizing filters containing denatured bacterial colonies (or lawns containing phage plaques) with the labeled probe (see Sambrook et al., Molecular Cloning: A Laboratory Manual, Cold Spring Harbor Laboratories, Cold Spring Harbor, NY, 1989). Hybridizing colonies or plaques are selected and expanded, and the DNA is isolated for further analysis. cDNA clones may be analyzed to determine the amount of additional sequence by, for example, PCR using a primer from the partial sequence and a primer from the vector. Restriction maps and partial sequences may be generated to identify one or more overlapping clones. The complete sequence may then be determined using

standard techniques, which may involve generating a series of deletion clones. The resulting overlapping sequences are then assembled into a single contiguous sequence. A full length cDNA molecule can be generated by ligating suitable fragments, using well known techniques.

Alternatively, there are numerous amplification techniques for obtaining a full length coding sequence from a partial cDNA sequence. Within such techniques, amplification is generally performed via PCR. Any of a variety of commercially available kits may be used to perform the amplification step. Primers may be designed using, for example, software well known in the art. Primers are preferably 22-30 nucleotides in length, have a GC content of at least 50% and anneal to the target sequence at temperatures of about 68°C to 72°C. The amplified region may be sequenced as described above, and overlapping sequences assembled into a contiguous sequence.

One such amplification technique is inverse PCR (see Triglia et al., Nucl. Acids Res. 16:8186, 1988), which uses restriction enzymes to generate a fragment in the known region of the gene. The fragment is then circularized by intramolecular ligation and used as a template for PCR with divergent primers derived from the known region. Within an alternative approach, sequences adjacent to a partial sequence may be retrieved by amplification with a primer to a linker sequence and a primer specific to a known region. The amplified sequences are typically subjected to a second round of amplification with the same linker primer and a second primer specific to the known region. A variation on this procedure, which employs two primers that initiate extension in opposite directions from the known sequence, is described in WO 96/38591. Another such technique is known as "rapid amplification of cDNA ends" or RACE. This technique involves the use of an internal primer and an external primer, which hybridizes to a polyA region or vector sequence, to identify sequences that are 5' and 3' of a known sequence. Additional techniques include capture PCR (Lagerstrom et al., PCR Methods Applic. 1:111-19, 1991) and walking PCR (Parker et al., Nucl. Acids. Res. 19:3055-60, 1991). Other methods employing amplification may also be employed to obtain a full length cDNA sequence.

In certain instances, it is possible to obtain a full length cDNA sequence by analysis of sequences provided in an expressed sequence tag (EST) database, such as that available from GenBank. Searches for overlapping ESTs may generally be performed using well known programs (e.g., NCBI BLAST searches), and such ESTs may be used to generate a contiguous full length sequence.

Certain nucleic acid sequences of cDNA molecules encoding at least a portion of a prostate tumor protein are provided in SEQ ID NOs:1-111, 115-171, 173-175, 177, 179-305, 307-315, 326, 328, 330, 332-335, 340-375, 381, 382 or 384-472. Isolation of these

polynucleotides is described below. Each of these prostate tumor proteins was overexpressed in prostate tumor tissue.

Polynucleotide variants may generally be prepared by any method known in the art, including chemical synthesis by, for example, solid phase phosphoramidite chemical synthesis. Modifications in a polynucleotide sequence may also be introduced using standard mutagenesis techniques, such as oligonucleotide-directed site-specific mutagenesis (see Adelman et al., DNA 2:183, 1983). Alternatively, RNA molecules may be generated by in vitro or in vivo transcription of DNA sequences encoding a prostate tumor protein, or portion thereof, provided that the DNA is incorporated into a vector with a suitable RNA polymerase promoter (such as T7 or SP6). Certain portions may be used to prepare an encoded polypeptide, as described herein. In addition, or alternatively, a portion may be administered to a patient such that the encoded polypeptide is generated in vivo (e.g., by transfecting antigen-presenting cells, such as dendritic cells, with a cDNA construct encoding a prostate tumor polypeptide, and administering the transfected cells to the patient).

A portion of a sequence complementary to a coding sequence (i.e., an antisense polynucleotide) may also be used as a probe or to modulate gene expression. cDNA constructs that can be transcribed into antisense RNA may also be introduced into cells of tissues to facilitate the production of antisense RNA. An antisense polynucleotide may be used, as described herein, to inhibit expression of a tumor protein. Antisense technology can be used to control gene expression through triple-helix formation, which compromises the ability of the double helix to open sufficiently for the binding of polymerases, transcription factors or regulatory molecules (see Gee et al., In Huber and Carr, Molecular and Immunologic Approaches, Futura Publishing Co. (Mt. Kisco, NY; 1994)). Alternatively, an antisense molecule may be designed to hybridize with a control region of a gene (e.g., promoter, enhancer or transcription initiation site), and block transcription of the gene; or to block translation by inhibiting binding of a transcript to ribosomes.

A portion of a coding sequence, or of a complementary sequence, may also be designed as a probe or primer to detect gene expression. Probes may be labeled with a variety of reporter groups, such as radionuclides and enzymes, and are preferably at least 10 nucleotides in length, more preferably at least 20 nucleotides in length and still more preferably at least 30 nucleotides in length. Primers, as noted above, are preferably 22-30 nucleotides in length.

Any polynucleotide may be further modified to increase stability in vivo. Possible modifications include, but are not limited to, the addition of flanking sequences at the 5' and/or 3' ends; the use of phosphorothioate or 2' O-methyl rather than phosphodiesterase linkages in the backbone; and/or the inclusion of nontraditional bases such

as inosine, queosine and wybutosine, as well as acetyl- methyl-, thio- and other modified forms of adenine, cytidine, guanine, thymine and uridine.

Nucleotide sequences as described herein may be joined to a variety of other nucleotide sequences using established recombinant DNA techniques. For example, a polynucleotide may be cloned into any of a variety of cloning vectors, including plasmids, phagemids, lambda phage derivatives and cosmids. Vectors of particular interest include expression vectors, replication vectors, probe generation vectors and sequencing vectors. In general, a vector will contain an origin of replication functional in at least one organism, convenient restriction endonuclease sites and one or more selectable markers. Other elements will depend upon the desired use, and will be apparent to those of ordinary skill in the art.

Within certain embodiments, polynucleotides may be formulated so as to permit entry into a cell of a mammal, and expression therein. Such formulations are particularly useful for therapeutic purposes, as described below. Those of ordinary skill in the art will appreciate that there are many ways to achieve expression of a polynucleotide in a target cell, and any suitable method may be employed. For example, a polynucleotide may be incorporated into a viral vector such as, but not limited to, adenovirus, adeno-associated virus, retrovirus, or vaccinia or other pox virus (e.g., avian pox virus). Techniques for incorporating DNA into such vectors are well known to those of ordinary skill in the art. A retroviral vector may additionally transfer or incorporate a gene for a selectable marker (to aid in the identification or selection of transduced cells) and/or a targeting moiety, such as a gene that encodes a ligand for a receptor on a specific target cell, to render the vector target specific. Targeting may also be accomplished using an antibody, by methods known to those of ordinary skill in the art.

Other formulations for therapeutic purposes include colloidal dispersion systems, such as macromolecule complexes, nanocapsules, microspheres, beads, and lipid-based systems including oil-in-water emulsions, micelles, mixed micelles, and liposomes. A preferred colloidal system for use as a delivery vehicle *in vitro* and *in vivo* is a liposome (*i.e.*, an artificial membrane vesicle). The preparation and use of such systems is well known in the art.

PROSTATE TUMOR POLYPEPTIDES

Within the context of the present invention, polypeptides may comprise at least an immunogenic portion of a prostate tumor protein or a variant thereof, as described herein. As noted above, a "prostate tumor protein" is a protein that is expressed by prostate tumor cells. Proteins that are prostate tumor proteins also react detectably within an immunoassay (such as an ELISA) with antisera from a patient with prostate cancer. Polypeptides as described herein may be of any length. Additional sequences derived from

the native protein and/or heterologous sequences may be present, and such sequences may (but need not) possess further immunogenic or antigenic properties.

An "immunogenic portion," as used herein is a portion of a protein that is recognized (i.e., specifically bound) by a B-cell and/or T-cell surface antigen receptor. Such immunogenic portions generally comprise at least 5 amino acid residues, more preferably at least 10, and still more preferably at least 20 amino acid residues of a prostate tumor protein or a variant thereof. Certain preferred immunogenic portions include peptides in which an N-terminal leader sequence and/or transmembrane domain have been deleted. Other preferred immunogenic portions may contain a small N- and/or C-terminal deletion (e.g., 1-30 amino acids, preferably 5-15 amino acids), relative to the mature protein.

Immunogenic portions may generally be identified using well known techniques, such as those summarized in Paul, Fundamental Immunology, 3rd ed., 243-247 (Raven Press, 1993) and references cited therein. Such techniques include screening polypeptides for the ability to react with antigen-specific antibodies, antisera and/or T-cell lines or clones. As used herein, antisera and antibodies are "antigen-specific" if they specifically bind to an antigen (i.e., they react with the protein in an ELISA or other immunoassay, and do not react detectably with unrelated proteins). Such antisera and antibodies may be prepared as described herein, and using well known techniques. An immunogenic portion of a native prostate tumor protein is a portion that reacts with such antisera and/or T-cells at a level that is not substantially less than the reactivity of the full length polypeptide (e.g., in an ELISA and/or T-cell reactivity assay). Such immunogenic portions may react within such assays at a level that is similar to or greater than the reactivity of the full length polypeptide. Such screens may generally be performed using methods well known to those of ordinary skill in the art, such as those described in Harlow and Lane, Antibodies: A Laboratory Manual, Cold Spring Harbor Laboratory, 1988. For example, a polypeptide may be immobilized on a solid support and contacted with patient sera to allow binding of antibodies within the sera to the immobilized polypeptide. Unbound sera may then be removed and bound antibodies detected using, for example, ¹²⁵I-labeled Protein A.

As noted above, a composition may comprise a variant of a native prostate tumor protein. A polypeptide "variant," as used herein, is a polypeptide that differs from a native prostate tumor protein in one or more substitutions, deletions, additions and/or insertions, such that the immunogenicity of the polypeptide is not substantially diminished. In other words, the ability of a variant to react with antigen-specific antisera may be enhanced or unchanged, relative to the native protein, or may be diminished by less than 50%, and preferably less than 20%, relative to the native protein. Such variants may generally be identified by modifying one of the above polypeptide sequences and evaluating the reactivity of the modified polypeptide with antigen-specific antibodies or antisera as described herein.

Preferred variants include those in which one or more portions, such as an N-terminal leader sequence or transmembrane domain, have been removed. Other preferred variants include variants in which a small portion (e.g., 1-30 amino acids, preferably 5-15 amino acids) has been removed from the N- and/or C-terminal of the mature protein. Polypeptide variants preferably exhibit at least about 70%, more preferably at least about 90% and most preferably at least about 95% identity (determined as described above) to the identified polypeptides.

Preferably, a variant contains conservative substitutions. A "conservative substitution" is one in which an amino acid is substituted for another amino acid that has similar properties, such that one skilled in the art of peptide chemistry would expect the secondary structure and hydropathic nature of the polypeptide to be substantially unchanged. Amino acid substitutions may generally be made on the basis of similarity in polarity, charge, solubility, hydrophobicity, hydrophilicity and/or the amphipathic nature of the residues. For example, negatively charged amino acids include aspartic acid and glutamic acid; positively charged amino acids include lysine and arginine; and amino acids with uncharged polar head groups having similar hydrophilicity values include leucine, isoleucine and valine; glycine and alanine; asparagine and glutamine; and serine, threonine, phenylalanine and tyrosine. Other groups of amino acids that may represent conservative changes include: (1) ala, pro, gly, glu, asp, gln, asn, ser, thr; (2) cys, ser, tyr, thr; (3) val, ile, leu, met, ala, phe; (4) lys, arg, his; and (5) phe, tyr, trp, his. A variant may also, or alternatively, contain nonconservative changes. In a preferred embodiment, variant polypeptides differ from a native sequence by substitution, deletion or addition of five amino acids or fewer. Variants may also (or alternatively) be modified by, for example, the deletion or addition of amino acids that have minimal influence on the immunogenicity, secondary structure and hydropathic nature of the polypeptide.

As noted above, polypeptides may comprise a signal (or leader) sequence at the N-terminal end of the protein which co-translationally or post-translationally directs transfer of the protein. The polypeptide may also be conjugated to a linker or other sequence for ease of synthesis, purification or identification of the polypeptide (e.g., poly-His), or to enhance binding of the polypeptide to a solid support. For example, a polypeptide may be conjugated to an immunoglobulin Fc region.

Polypeptides may be prepared using any of a variety of well known techniques. Recombinant polypeptides encoded by DNA sequences as described above may be readily prepared from the DNA sequences using any of a variety of expression vectors known to those of ordinary skill in the art. Expression may be achieved in any appropriate host cell that has been transformed or transfected with an expression vector containing a DNA molecule that encodes a recombinant polypeptide. Suitable host cells include prokaryotes, yeast and higher eukaryotic cells. Preferably, the host cells employed are

E. coli, yeast or a mammalian cell line such as COS or CHO. Supernatants from suitable host/vector systems which secrete recombinant protein or polypeptide into culture media may be first concentrated using a commercially available filter. Following concentration, the concentrate may be applied to a suitable purification matrix such as an affinity matrix or an ion exchange resin. Finally, one or more reverse phase HPLC steps can be employed to further purify a recombinant polypeptide.

Portions and other variants having fewer than about 100 amino acids, and generally fewer than about 50 amino acids, may also be generated by synthetic means, using techniques well known to those of ordinary skill in the art. For example, such polypeptides may be synthesized using any of the commercially available solid-phase techniques, such as the Merrifield solid-phase synthesis method, where amino acids are sequentially added to a growing amino acid chain. See Merrifield, J. Am. Chem. Soc. 85:2149-2146, 1963. Equipment for automated synthesis of polypeptides is commercially available from suppliers such as Perkin Elmer/Applied BioSystems Division (Foster City, CA), and may be operated according to the manufacturer's instructions.

Within certain specific embodiments, a polypeptide may be a fusion protein that comprises multiple polypeptides as described herein, or that comprises at least one polypeptide as described herein and an unrelated sequence, such as a known tumor protein. A fusion partner may, for example, assist in providing T helper epitopes (an immunological fusion partner), preferably T helper epitopes recognized by humans, or may assist in expressing the protein (an expression enhancer) at higher yields than the native recombinant protein. Certain preferred fusion partners are both immunological and expression enhancing fusion partners. Other fusion partners may be selected so as to increase the solubility of the protein or to enable the protein to be targeted to desired intracellular compartments. Still further fusion partners include affinity tags, which facilitate purification of the protein.

Fusion proteins may generally be prepared using standard techniques, including chemical conjugation. Preferably, a fusion protein is expressed as a recombinant protein, allowing the production of increased levels, relative to a non-fused protein, in an expression system. Briefly, DNA sequences encoding the polypeptide components may be assembled separately, and ligated into an appropriate expression vector. The 3' end of the DNA sequence encoding one polypeptide component is ligated, with or without a peptide linker, to the 5' end of a DNA sequence encoding the second polypeptide component so that the reading frames of the sequences are in phase. This permits translation into a single fusion protein that retains the biological activity of both component polypeptides.

A peptide linker sequence may be employed to separate the first and the second polypeptide components by a distance sufficient to ensure that each polypeptide folds into its secondary and tertiary structures. Such a peptide linker sequence is incorporated into

the fusion protein using standard techniques well known in the art. Suitable peptide linker sequences may be chosen based on the following factors: (1) their ability to adopt a flexible extended conformation; (2) their inability to adopt a secondary structure that could interact with functional epitopes on the first and second polypeptides; and (3) the lack of hydrophobic or charged residues that might react with the polypeptide functional epitopes. Preferred peptide linker sequences contain Gly, Asn and Ser residues. Other near neutral amino acids, such as Thr and Ala may also be used in the linker sequence. Amino acid sequences which may be usefully employed as linkers include those disclosed in Maratea et al., Gene 40:39-46, 1985; Murphy et al., Proc. Natl. Acad. Sci. USA 83:8258-8262, 1986; U.S. Patent No. 4,935,233 and U.S. Patent No. 4,751,180. The linker sequence may generally be from 1 to about 50 amino acids in length. Linker sequences are not required when the first and second polypeptides have non-essential N-terminal amino acid regions that can be used to separate the functional domains and prevent steric interference.

The ligated DNA sequences are operably linked to suitable transcriptional or translational regulatory elements. The regulatory elements responsible for expression of DNA are located only 5' to the DNA sequence encoding the first polypeptides. Similarly, stop codons required to end translation and transcription termination signals are only present 3' to the DNA sequence encoding the second polypeptide.

Fusion proteins are also provided that comprise a polypeptide of the present invention together with an unrelated immunogenic protein. Preferably the immunogenic protein is capable of eliciting a recall response. Examples of such proteins include tetanus, tuberculosis and hepatitis proteins (see, for example, Stoute et al. New Engl. J. Med., 336:86-91, 1997).

Within preferred embodiments, an immunological fusion partner is derived from protein D, a surface protein of the gram-negative bacterium Haemophilus influenza B (WO 91/18926). Preferably, a protein D derivative comprises approximately the first third of the protein (e.g., the first N-terminal 100-110 amino acids), and a protein D derivative may be lipidated. Within certain preferred embodiments, the first 109 residues of a Lipoprotein D fusion partner is included on the N-terminus to provide the polypeptide with additional exogenous T-cell epitopes and to increase the expression level in E. coli (thus functioning as an expression enhancer). The lipid tail ensures optimal presentation of the antigen to antigen presenting cells. Other fusion partners include the non-structural protein from influenzae virus, NS1 (hemaglutinin). Typically, the N-terminal 81 amino acids are used, although different fragments that include T-helper epitopes may be used.

In another embodiment, the immunological fusion partner is the protein known as LYTA, or a portion thereof (preferably a C-terminal portion). LYTA is derived from Streptococcus pneumoniae, which synthesizes an N-acetyl-L-alanine amidase known as

amidase LYTA (encoded by the LytA gene; Gene 43:265-292, 1986). LYTA is an autolysin that specifically degrades certain bonds in the peptidoglycan backbone. The C-terminal domain of the LYTA protein is responsible for the affinity to the choline or to some choline analogues such as DEAE. This property has been exploited for the development of E. coli C-LYTA expressing plasmids useful for expression of fusion proteins. Purification of hybrid proteins containing the C-LYTA fragment at the amino terminus has been described (see Biotechnology 10:795-798, 1992). Within a preferred embodiment, a repeat portion of LYTA may be incorporated into a fusion protein. A repeat portion is found in the C-terminal region starting at residue 178. A particularly preferred repeat portion incorporates residues 188-305.

In general, polypeptides (including fusion proteins) and polynucleotides as described herein are isolated. An "isolated" polypeptide or polynucleotide is one that is removed from its original environment. For example, a naturally-occurring protein is isolated if it is separated from some or all of the coexisting materials in the natural system. Preferably, such polypeptides are at least about 90% pure, more preferably at least about 95% pure and most preferably at least about 99% pure. A polynucleotide is considered to be isolated if, for example, it is cloned into a vector that is not a part of the natural environment.

BINDING AGENTS

The present invention further provides agents, such as antibodies and antigen-binding fragments thereof, that specifically bind to a prostate tumor protein. As used herein, an antibody, or antigen-binding fragment thereof, is said to "specifically bind" to a prostate tumor protein if it reacts at a detectable level (within, for example, an ELISA) with a prostate tumor protein, and does not react detectably with unrelated proteins under similar conditions. As used herein, "binding" refers to a noncovalent association between two separate molecules such that a complex is formed. The ability to bind may be evaluated by, for example, determining a binding constant for the formation of the complex. The binding constant is the value obtained when the concentration of the complex is divided by the product of the component concentrations. In general, two compounds are said to "bind," in the context of the present invention, when the binding constant for complex formation exceeds about 10³ L/mol. The binding constant may be determined using methods well known in the art.

Binding agents may be further capable of differentiating between patients with and without a cancer, such as prostate cancer, using the representative assays provided herein. In other words, antibodies or other binding agents that bind to a prostate tumor protein will generate a signal indicating the presence of a cancer in at least about 20% of patients with the disease, and will generate a negative signal indicating the absence of the disease in at least about 90% of individuals without the cancer. To determine whether a binding agent satisfies this requirement, biological samples (e.g., blood, sera, urine and/or tumor biopsies) from

patients with and without a cancer (as determined using standard clinical tests) may be assayed as described herein for the presence of polypeptides that bind to the binding agent. It will be apparent that a statistically significant number of samples with and without the disease should be assayed. Each binding agent should satisfy the above criteria; however, those of ordinary skill in the art will recognize that binding agents may be used in combination to improve sensitivity.

Any agent that satisfies the above requirements may be a binding agent. For example, a binding agent may be a ribosome, with or without a peptide component, an RNA molecule or a polypeptide. In a preferred embodiment, a binding agent is an antibody or an antigen-binding fragment thereof. Antibodies may be prepared by any of a variety of techniques known to those of ordinary skill in the art. See, e.g., Harlow and Lane, Antibodies: A Laboratory Manual, Cold Spring Harbor Laboratory, 1988. In general, antibodies can be produced by cell culture techniques, including the generation of monoclonal antibodies as described herein, or via transfection of antibody genes into suitable bacterial or mammalian cell hosts, in order to allow for the production of recombinant antibodies. In one technique, an immunogen comprising the polypeptide is initially injected into any of a wide variety of mammals (e.g., mice, rats, rabbits, sheep or goats). In this step, the polypeptides of this invention may serve as the immunogen without modification. Alternatively, particularly for relatively short polypeptides, a superior immune response may be elicited if the polypeptide is joined to a carrier protein, such as bovine serum albumin or keyhole limpet hemocyanin. The immunogen is injected into the animal host, preferably according to a predetermined schedule incorporating one or more booster immunizations, and the animals are bled periodically. Polyclonal antibodies specific for the polypeptide may then be purified from such antisera by, for example, affinity chromatography using the polypeptide coupled to a suitable solid support.

Monoclonal antibodies specific for an antigenic polypeptide of interest may be prepared, for example, using the technique of Kohler and Milstein, *Eur. J. Immunol.* 6:511-519, 1976, and improvements thereto. Briefly, these methods involve the preparation of immortal cell lines capable of producing antibodies having the desired specificity (*i.e.*, reactivity with the polypeptide of interest). Such cell lines may be produced, for example, from spleen cells obtained from an animal immunized as described above. The spleen cells are then immortalized by, for example, fusion with a myeloma cell fusion partner, preferably one that is syngeneic with the immunized animal. A variety of fusion techniques may be employed. For example, the spleen cells and myeloma cells may be combined with a nonionic detergent for a few minutes and then plated at low density on a selective medium that supports the growth of hybrid cells, but not myeloma cells. A preferred selection technique uses HAT (hypoxanthine, aminopterin, thymidine) selection. After a sufficient

time, usually about 1 to 2 weeks, colonies of hybrids are observed. Single colonies are selected and their culture supernatants tested for binding activity against the polypeptide. Hybridomas having high reactivity and specificity are preferred.

Monoclonal antibodies may be isolated from the supernatants of growing hybridoma colonies. In addition, various techniques may be employed to enhance the yield, such as injection of the hybridoma cell line into the peritoneal cavity of a suitable vertebrate host, such as a mouse. Monoclonal antibodies may then be harvested from the ascites fluid or the blood. Contaminants may be removed from the antibodies by conventional techniques, such as chromatography, gel filtration, precipitation, and extraction. The polypeptides of this invention may be used in the purification process in, for example, an affinity chromatography step.

Within certain embodiments, the use of antigen-binding fragments of antibodies may be preferred. Such fragments include Fab fragments, which may be prepared using standard techniques. Briefly, immunoglobulins may be purified from rabbit serum by affinity chromatography on Protein A bead columns (Harlow and Lane, Antibodies: A Laboratory Manual, Cold Spring Harbor Laboratory, 1988) and digested by papain to yield Fab and Fc fragments. The Fab and Fc fragments may be separated by affinity chromatography on protein A bead columns.

Monoclonal antibodies of the present invention may be coupled to one or more therapeutic agents. Suitable agents in this regard include radionuclides, differentiation inducers, drugs, toxins, and derivatives thereof. Preferred radionuclides include ⁹⁰Y, ¹²³I, ¹²⁵I, ¹³¹I, ¹⁸⁶Re, ¹⁸⁸Re, ²¹¹At, and ²¹²Bi. Preferred drugs include methotrexate, and pyrimidine and purine analogs. Preferred differentiation inducers include phorbol esters and butyric acid. Preferred toxins include ricin, abrin, diptheria toxin, cholera toxin, gelonin, Pseudomonas exotoxin, Shigella toxin, and pokeweed antiviral protein.

A therapeutic agent may be coupled (e.g., covalently bonded) to a suitable monoclonal antibody either directly or indirectly (e.g., via a linker group). A direct reaction between an agent and an antibody is possible when each possesses a substituent capable of reacting with the other. For example, a nucleophilic group, such as an amino or sulfhydryl group, on one may be capable of reacting with a carbonyl-containing group, such as an anhydride or an acid halide, or with an alkyl group containing a good leaving group (e.g., a halide) on the other.

Alternatively, it may be desirable to couple a therapeutic agent and an antibody via a linker group. A linker group can function as a spacer to distance an antibody from an agent in order to avoid interference with binding capabilities. A linker group can also serve to increase the chemical reactivity of a substituent on an agent or an antibody, and

thus increase the coupling efficiency. An increase in chemical reactivity may also facilitate the use of agents, or functional groups on agents, which otherwise would not be possible.

It will be evident to those skilled in the art that a variety of bifunctional or polyfunctional reagents, both homo- and hetero-functional (such as those described in the catalog of the Pierce Chemical Co., Rockford, IL), may be employed as the linker group. Coupling may be effected, for example, through amino groups, carboxyl groups, sulfhydryl groups or oxidized carbohydrate residues. There are numerous references describing such methodology, e.g., U.S. Patent No. 4,671,958, to Rodwell et al.

Where a therapeutic agent is more potent when free from the antibody portion of the immunoconjugates of the present invention, it may be desirable to use a linker group which is cleavable during or upon internalization into a cell. A number of different cleavable linker groups have been described. The mechanisms for the intracellular release of an agent from these linker groups include cleavage by reduction of a disulfide bond (e.g., U.S. Patent No. 4,489,710, to Spitler), by irradiation of a photolabile bond (e.g., U.S. Patent No. 4,625,014, to Senter et al.), by hydrolysis of derivatized amino acid side chains (e.g., U.S. Patent No. 4,638,045, to Kohn et al.), by serum complement-mediated hydrolysis (e.g., U.S. Patent No. 4,671,958, to Rodwell et al.), and acid-catalyzed hydrolysis (e.g., U.S. Patent No. 4,569,789, to Blattler et al.).

It may be desirable to couple more than one agent to an antibody. In one embodiment, multiple molecules of an agent are coupled to one antibody molecule. In another embodiment, more than one type of agent may be coupled to one antibody. Regardless of the particular embodiment, immunoconjugates with more than one agent may be prepared in a variety of ways. For example, more than one agent may be coupled directly to an antibody molecule, or linkers which provide multiple sites for attachment can be used. Alternatively, a carrier can be used.

A carrier may bear the agents in a variety of ways, including covalent bonding either directly or via a linker group. Suitable carriers include proteins such as albumins (e.g., U.S. Patent No. 4,507,234, to Kato et al.), peptides and polysaccharides such as aminodextran (e.g., U.S. Patent No. 4,699,784, to Shih et al.). A carrier may also bear an agent by noncovalent bonding or by encapsulation, such as within a liposome vesicle (e.g., U.S. Patent Nos. 4,429,008 and 4,873,088). Carriers specific for radionuclide agents include radiohalogenated small molecules and chelating compounds. For example, U.S. Patent No. 4,735,792 discloses representative radiohalogenated small molecules and their synthesis. A radionuclide chelate may be formed from chelating compounds that include those containing nitrogen and sulfur atoms as the donor atoms for binding the metal, or metal oxide, radionuclide. For example, U.S. Patent No. 4,673,562, to Davison et al. discloses representative chelating compounds and their synthesis.

A variety of routes of administration for the antibodies and immunoconjugates may be used. Typically, administration will be intravenous, intramuscular, subcutaneous or in the bed of a resected tumor. It will be evident that the precise dose of the antibody/immunoconjugate will vary depending upon the antibody used, the antigen density on the tumor, and the rate of clearance of the antibody.

T CELLS

Immunotherapeutic compositions may also, or alternatively, comprise T cells specific for a prostate tumor protein. Such cells may generally be prepared *in vitro* or *ex vivo*, using standard procedures. For example, T cells may be isolated from bone marrow, peripheral blood, or a fraction of bone marrow or peripheral blood of a patient, using a commercially available cell separation system, such as the CEPRATETM system, available from CellPro Inc., Bothell WA (*see also* U.S. Patent No. 5,240,856; U.S. Patent No. 5,215,926; WO 89/06280; WO 91/16116 and WO 92/07243). Alternatively, T cells may be derived from related or unrelated humans, non-human mammals, cell lines or cultures.

T cells may be stimulated with a prostate tumor polypeptide, polynucleotide encoding a prostate tumor polypeptide and/or an antigen presenting cell (APC) that expresses such a polypeptide. Such stimulation is performed under conditions and for a time sufficient to permit the generation of T cells that are specific for the polypeptide. Preferably, a prostate tumor polypeptide or polynucleotide is present within a delivery vehicle, such as a microsphere, to facilitate the generation of specific T cells.

T cells are considered to be specific for a prostate tumor polypeptide if the T cells kill target cells coated with the polypeptide or expressing a gene encoding the T cell specificity may be evaluated using any of a variety of standard For example, within a chromium release assay or proliferation assay, a techniques. stimulation index of more than two fold increase in lysis and/or proliferation, compared to negative controls, indicates T cell specificity. Such assays may be performed, for example, as described in Chen et al., Cancer Res. 54:1065-1070, 1994. Alternatively, detection of the proliferation of T cells may be accomplished by a variety of known techniques. For example, T cell proliferation can be detected by measuring an increased rate of DNA synthesis (e.g., by pulse-labeling cultures of T cells with tritiated thymidine and measuring the amount of tritiated thymidine incorporated into DNA). Contact with a prostate tumor polypeptide (100 $ng/ml - 100 \mu g/ml$, preferably 200 $ng/ml - 25 \mu g/ml$) for 3 - 7 days should result in at least a two fold increase in proliferation of the T cells. Contact as described above for 2-3 hours should result in activation of the T cells, as measured using standard cytokine assays in which a two fold increase in the level of cytokine release (e.g., TNF or IFN-γ) is indicative of T cell activation (see Coligan et al., Current Protocols in Immunology, vol. 1, Wiley Interscience

(Greene 1998)). T cells that have been activated in response to a prostate tumor polypeptide, polynucleotide or polypeptide-expressing APC may be CD4⁺ and/or CD8⁺. Prostate tumor protein-specific T cells may be expanded using standard techniques. Within preferred embodiments, the T cells are derived from either a patient or a related, or unrelated, donor and are administered to the patient following stimulation and expansion.

For therapeutic purposes, CD4⁺ or CD8⁺ T cells that proliferate in response to a prostate tumor polypeptide, polynucleotide or APC can be expanded in number either *in vitro* or *in vivo*. Proliferation of such T cells *in vitro* may be accomplished in a variety of ways. For example, the T cells can be re-exposed to a prostate tumor polypeptide, or a short peptide corresponding to an immunogenic portion of such a polypeptide, with or without the addition of T cell growth factors, such as interleukin-2, and/or stimulator cells that synthesize a prostate tumor polypeptide. Alternatively, one or more T cells that proliferate in the presence of a prostate tumor protein can be expanded in number by cloning. Methods for cloning cells are well known in the art, and include limiting dilution.

PHARMACEUTICAL COMPOSITIONS AND VACCINES

Within certain aspects, polypeptides, polynucleotides, T cells and/or binding agents disclosed herein may be incorporated into pharmaceutical compositions or immunogenic compositions (i.e., vaccines). Pharmaceutical compositions comprise one or more such compounds and a physiologically acceptable carrier. Vaccines may comprise one or more such compounds and a non-specific immune response enhancer. A non-specific immune response enhancer may be any substance that enhances an immune response to an exogenous antigen. Examples of non-specific immune response enhancers include adjuvants, biodegradable microspheres (e.g., polylactic galactide) and liposomes (into which the compound is incorporated; see e.g., Fullerton, U.S. Patent No. 4,235,877). Vaccine preparation is generally described in, for example, M.F. Powell and M.J. Newman, eds., "Vaccine Design (the subunit and adjuvant approach)," Plenum Press (NY, 1995). Pharmaceutical compositions and vaccines within the scope of the present invention may also contain other compounds, which may be biologically active or inactive. For example, one or more immunogenic portions of other tumor antigens may be present, either incorporated into a fusion polypeptide or as a separate compound, within the composition or vaccine.

A pharmaceutical composition or vaccine may contain DNA encoding one or more of the polypeptides as described above, such that the polypeptide is generated *in situ*. As noted above, the DNA may be present within any of a variety of delivery systems known to those of ordinary skill in the art, including nucleic acid expression systems, bacteria and viral expression systems. Numerous gene delivery techniques are well known in the art, such as those described by Rolland, *Crit. Rev. Therap. Drug Carrier Systems* 15:143-198, 1998,

and references cited therein. Appropriate nucleic acid expression systems contain the necessary DNA sequences for expression in the patient (such as a suitable promoter and terminating signal). Bacterial delivery systems involve the administration of a bacterium (such as Bacillus-Calmette-Guerrin) that expresses an immunogenic portion of the polypeptide on its cell surface or secretes such an epitope. In a preferred embodiment, the DNA may be introduced using a viral expression system (e.g., vaccinia or other pox virus, retrovirus, or adenovirus), which may involve the use of a non-pathogenic (defective), replication competent virus. Suitable systems are disclosed, for example, in Fisher-Hoch et al., Proc. Natl. Acad. Sci. USA 86:317-321, 1989; Flexner et al., Ann. N.Y. Acad. Sci. 569:86-103, 1989; Flexner et al., Vaccine 8:17-21, 1990; U.S. Patent Nos. 4,603,112, 4,769,330, and 5,017,487; WO 89/01973; U.S. Patent No. 4,777,127; GB 2,200,651; EP 0,345,242; WO 91/02805; Berkner, Biotechniques 6:616-627, 1988; Rosenfeld et al., Science 252:431-434, 1991; Kolls et al., Proc. Natl. Acad. Sci. USA 91:215-219, 1994; Kass-Eisler et al., Proc. Natl. Acad. Sci. USA 90:11498-11502, 1993; Guzman et al., Circulation 88:2838-2848, 1993; and Guzman et al., Cir. Res. 73:1202-1207, 1993. Techniques for incorporating DNA into such expression systems are well known to those of ordinary skill in the art. The DNA may also be "naked," as described, for example, in Ulmer et al., Science 259:1745-1749, 1993 and reviewed by Cohen, Science 259:1691-1692, 1993. The uptake of naked DNA may be increased by coating the DNA onto biodegradable beads. which are efficiently transported into the cells.

While any suitable carrier known to those of ordinary skill in the art may be employed in the pharmaceutical compositions of this invention, the type of carrier will vary depending on the mode of administration. Compositions of the present invention may be formulated for any appropriate manner of administration, including for example, topical, oral, nasal, intravenous, intracranial, intraperitoneal, subcutaneous or intramuscular administration. For parenteral administration, such as subcutaneous injection, the carrier preferably comprises water, saline, alcohol, a fat, a wax or a buffer. For oral administration, any of the above carriers or a solid carrier, such as mannitol, lactose, starch, magnesium stearate, sodium saccharine, talcum, cellulose, glucose, sucrose, and magnesium carbonate, may be employed. Biodegradable microspheres (e.g., polylactate polyglycolate) may also be employed as carriers for the pharmaceutical compositions of this invention. Suitable biodegradable microspheres are disclosed, for example, in U.S. Patent Nos. 4,897,268 and 5,075,109.

Such compositions may also comprise buffers (e.g., neutral buffered saline or phosphate buffered saline), carbohydrates (e.g., glucose, mannose, sucrose or dextrans), mannitol, proteins, polypeptides or amino acids such as glycine, antioxidants, chelating agents such as EDTA or glutathione, adjuvants (e.g., aluminum hydroxide) and/or

preservatives. Alternatively, compositions of the present invention may be formulated as a lyophilizate. Compounds may also be encapsulated within liposomes using well known technology.

Any of a variety of non-specific immune response enhancers may be employed in the vaccines of this invention. For example, an adjuvant may be included. Most adjuvants contain a substance designed to protect the antigen from rapid catabolism, such as aluminum hydroxide or mineral oil, and a stimulator of immune responses, such as lipid A, Bortadella pertussis or Mycobacterium tuberculosis derived proteins. Suitable adjuvants are commercially available as, for example, Freund's Incomplete Adjuvant and Complete Adjuvant (Difco Laboratories, Detroit, MI); Merck Adjuvant 65 (Merck and Company, Inc., Rahway, NJ); aluminum salts such as aluminum hydroxide gel (alum) or aluminum phosphate; salts of calcium, iron or zinc; an insoluble suspension of acylated tyrosine; acylated sugars; cationically or anionically derivatized polysaccharides; polyphosphazenes; biodegradable microspheres; monophosphoryl lipid A and quil A. Cytokines, such as GM-CSF or interleukin-2, -7, or -12, may also be used as adjuvants.

Within the vaccines provided herein, the adjuvant composition is preferably designed to induce an immune response predominantly of the Th1 type. High levels of Th1-type cytokines (e.g., IFN-γ, IL-2 and IL-12) tend to favor the induction of cell mediated immune responses to an administered antigen. In contrast, high levels of Th2-type cytokines (e.g., IL-4, IL-5, IL-6, IL-10 and TNF-β) tend to favor the induction of humoral immune responses. Following application of a vaccine as provided herein, a patient will support an immune response that includes Th1- and Th2-type responses. Within a preferred embodiment, in which a response is predominantly Th1-type, the level of Th1-type cytokines will increase to a greater extent than the level of Th2-type cytokines. The levels of these cytokines may be readily assessed using standard assays. For a review of the families of cytokines, see Mosmann and Coffman, Ann. Rev. Immunol. 7:145-173, 1989.

Preferred adjuvants for use in eliciting a predominantly Th1-type response include, for example, a combination of monophosphoryl lipid A, preferably 3-de-O-acylated monophosphoryl lipid A (3D-MPL), together with an aluminum salt. MPL adjuvants are available from Ribi ImmunoChem Research Inc. (Hamilton, MT; see US Patent Nos. 4,436,727; 4,877,611; 4,866,034 and 4,912,094). CpG-containing oligonucleotides (in which the CpG dinucleotide is unmethylated) also induce a predominantly Th1 response. Such oligonucleotides are well known and are described, for example, in WO 96/02555. Another preferred adjuvant is a saponin, preferably QS21, which may be used alone or in combination with other adjuvants. For example, an enhanced system involves the combination of a monophosphoryl lipid A and saponin derivative, such as the combination of QS21 and 3D-MPL as described in WO 94/00153, or a less reactogenic composition where the QS21 is

quenched with cholesterol, as described in WO 96/33739. Other preferred formulations comprises an oil-in-water emulsion and tocopherol. A particularly potent adjuvant formulation involving QS21, 3D-MPL and tocopherol in an oil-in-water emulsion is described in WO 95/17210. Any vaccine provided herein may be prepared using well known methods that result in a combination of antigen, immune response enhancer and a suitable carrier or excipient.

The compositions described herein may be administered as part of a sustained release formulation (i.e., a formulation such as a capsule or sponge that effects a slow release of compound following administration). Such formulations may generally be prepared using well known technology and administered by, for example, oral, rectal or subcutaneous implantation, or by implantation at the desired target site. Sustained-release formulations may contain a polypeptide, polynucleotide or antibody dispersed in a carrier matrix and/or contained within a reservoir surrounded by a rate controlling membrane. Carriers for use within such formulations are biocompatible, and may also be biodegradable; preferably the formulation provides a relatively constant level of active component release. The amount of active compound contained within a sustained release formulation depends upon the site of implantation, the rate and expected duration of release and the nature of the condition to be treated or prevented.

Any of a variety of delivery vehicles may be employed within pharmaceutical compositions and vaccines to facilitate production of an antigen-specific immune response that targets tumor cells. Delivery vehicles include antigen presenting cells (APCs), such as dendritic cells, macrophages, B cells, monocytes and other cells that may be engineered to be efficient APCs. Such cells may, but need not, be genetically modified to increase the capacity for presenting the antigen, to improve activation and/or maintenance of the T cell response, to have anti-tumor effects *per se* and/or to be immunologically compatible with the receiver (*i.e.*, matched HLA haplotype). APCs may generally be isolated from any of a variety of biological fluids and organs, including tumor and peritumoral tissues, and may be autologous, allogeneic, syngeneic or xenogeneic cells.

Certain preferred embodiments of the present invention use dendritic cells or progenitors thereof as antigen-presenting cells. Dendritic cells are highly potent APCs (Banchereau and Steinman, Nature 392:245-251, 1998) and have been shown to be effective as a physiological adjuvant for eliciting prophylactic or therapeutic antitumor immunity (see Timmerman and Levy, Ann. Rev. Med. 50:507-529, 1999). In general, dendritic cells may be identified based on their typical shape (stellate in situ, with marked cytoplasmic processes (dendrites) visible in vitro) and based on the lack of differentiation markers of B cells (CD19 and CD20), T cells (CD3), monocytes (CD14) and natural killer cells (CD56), as determined using standard assays. Dendritic cells may, of course, be engineered to express specific cell-

surface receptors or ligands that are not commonly found on dendritic cells in vivo or ex vivo, and such modified dendritic cells are contemplated by the present invention. As an alternative to dendritic cells, secreted vesicles antigen-loaded dendritic cells (called exosomes) may be used within a vaccine (see Zitvogel et al., Nature Med. 4:594-600, 1998).

Dendritic cells and progenitors may be obtained from peripheral blood, bone marrow, tumor-infiltrating cells, peritumoral tissues-infiltrating cells, lymph nodes, spleen, skin, umbilical cord blood or any other suitable tissue or fluid. For example, dendritic cells may be differentiated *ex vivo* by adding a combination of cytokines such as GM-CSF, IL-4, IL-13 and/or TNFα to cultures of monocytes harvested from peripheral blood. Alternatively, CD34 positive cells harvested from peripheral blood, umbilical cord blood or bone marrow may be differentiated into dendritic cells by adding to the culture medium combinations of GM-CSF, IL-3, TNFα, CD40 ligand, LPS, flt3 ligand and/or other compound(s) that induce maturation and proliferation of dendritic cells.

Dendritic cells are conveniently categorized as "immature" and "mature" cells, which allows a simple way to discriminate between two well characterized phenotypes. However, this nomenclature should not be construed to exclude all possible intermediate stages of differentiation. Immature dendritic cells are characterized as APC with a high capacity for antigen uptake and processing, which correlates with the high expression of Fcy receptor, mannose receptor and DEC-205 marker. The mature phenotype is typically characterized by a lower expression of these markers, but a high expression of cell surface molecules responsible for T cell activation such as class I and class II MHC, adhesion molecules (e.g., CD54 and CD11) and costimulatory molecules (e.g., CD40, CD80 and CD86).

APCs may generally be transfected with a polynucleotide encoding a prostate tumor protein (or portion or other variant thereof) such that the prostate tumor polypeptide, or an immunogenic portion thereof, is expressed on the cell surface. Such transfection may take place ex vivo, and a composition or vaccine comprising such transfected cells may then be used for therapeutic purposes, as described herein. Alternatively, a gene delivery vehicle that targets a dendritic or other antigen presenting cell may be administered to a patient, resulting in transfection that occurs in vivo. In vivo and ex vivo transfection of dendritic cells, for example, may generally be performed using any methods known in the art, such as those described in WO 97/24447, or the gene gun approach described by Mahvi et al., Immunology and cell Biology 75:456-460, 1997. Antigen loading of dendritic cells may be achieved by incubating dendritic cells or progenitor cells with the prostate tumor polypeptide, DNA (naked or within a plasmid vector) or RNA; or with antigen-expressing recombinant bacterium or viruses (e.g., vaccinia, fowlpox, adenovirus or lentivirus vectors). Prior to loading, the polypeptide may be covalently conjugated to an immunological partner that

provides T cell help (e.g., a carrier molecule). Alternatively, a dendritic cell may be pulsed with a non-conjugated immunological partner, separately or in the presence of the polypeptide.

CANCER THERAPY

In further aspects of the present invention, the compositions described herein may be used for immunotherapy of cancer, such as prostate cancer. Within such methods, pharmaceutical compositions and vaccines are typically administered to a patient. As used herein, a "patient" refers to any warm-blooded animal, preferably a human. A patient may or may not be afflicted with cancer. Accordingly, the above pharmaceutical compositions and vaccines may be used to prevent the development of a cancer or to treat a patient afflicted with a cancer. A cancer may be diagnosed using criteria generally accepted in the art, including the presence of a malignant tumor. Pharmaceutical compositions and vaccines may be administered either prior to or following surgical removal of primary tumors and/or treatment such as administration of radiotherapy or conventional chemotherapeutic drugs.

Within certain embodiments, immunotherapy may be active immunotherapy, in which treatment relies on the *in vivo* stimulation of the endogenous host immune system to react against tumors with the administration of immune response-modifying agents (such as polypeptides and polynucleotides disclosed herein).

Within other embodiments, immunotherapy may be passive immunotherapy, in which treatment involves the delivery of agents with established tumor-immune reactivity (such as effector cells or antibodies) that can directly or indirectly mediate antitumor effects and does not necessarily depend on an intact host immune system. Examples of effector cells include T cells as discussed above, T lymphocytes (such as CD8+ cytotoxic T lymphocytes and CD4+ T-helper tumor-infiltrating lymphocytes), killer cells (such as Natural Killer cells and lymphokine-activated killer cells), B cells and antigen-presenting cells (such as dendritic cells and macrophages) expressing a polypeptide provided herein. T cell receptors and antibody receptors specific for the polypeptides recited herein may be cloned, expressed and transferred into other vectors or effector cells for adoptive immunotherapy. The polypeptides provided herein may also be used to generate antibodies or anti-idiotypic antibodies (as described above and in U.S. Patent No. 4,918,164) for passive immunotherapy.

Effector cells may generally be obtained in sufficient quantities for adoptive immunotherapy by growth *in vitro*, as described herein. Culture conditions for expanding single antigen-specific effector cells to several billion in number with retention of antigen recognition *in vivo* are well known in the art. Such *in vitro* culture conditions typically use intermittent stimulation with antigen, often in the presence of cytokines (such as IL-2) and non-dividing feeder cells. As noted above, immunoreactive polypeptides as provided herein

may be used to rapidly expand antigen-specific T cell cultures in order to generate a sufficient number of cells for immunotherapy. In particular, antigen-presenting cells, such as dendritic, macrophage, monocyte, fibroblast or B cells, may be pulsed with immunoreactive polypeptides or transfected with one or more polynucleotides using standard techniques well known in the art. For example, antigen-presenting cells can be transfected with a polynucleotide having a promoter appropriate for increasing expression in a recombinant virus or other expression system. Cultured effector cells for use in therapy must be able to grow and distribute widely, and to survive long term *in vivo*. Studies have shown that cultured effector cells can be induced to grow in vivo and to survive long term in substantial numbers by repeated stimulation with antigen supplemented with IL-2 (see, for example, Cheever et al., Immunological Reviews 157:177, 1997).

Alternatively, a vector expressing a polypeptide recited herein may be introduced into antigen presenting cells taken from a patient and clonally propagated ex vivo for transplant back into the same patient. Transfected cells may be reintroduced into the patient using any means known in the art, preferably in sterile form by intravenous, intracavitary, intraperitoneal or intratumor administration.

Routes and frequency of administration of the therapeutic compositions disclosed herein, as well as dosage, will vary from individual to individual, and may be readily established using standard techniques. In general, the pharmaceutical compositions and vaccines may be administered by injection (e.g., intracutaneous, intramuscular, intravenous or subcutaneous), intranasally (e.g., by aspiration) or orally. Preferably, between 1 and 10 doses may be administered over a 52 week period. Preferably, 6 doses are administered, at intervals of 1 month, and booster vaccinations may be given periodically thereafter. Alternate protocols may be appropriate for individual patients. A suitable dose is an amount of a compound that, when administered as described above, is capable of promoting an anti-tumor immune response, and is at least 10-50% above the basal (i.e., untreated) level. Such response can be monitored by measuring the anti-tumor antibodies in a patient or by vaccine-dependent generation of cytolytic effector cells capable of killing the patient's tumor cells in vitro. Such vaccines should also be capable of causing an immune response that leads to an improved clinical outcome (e.g., more frequent remissions, complete or partial or longer disease-free survival) in vaccinated patients as compared to nonvaccinated patients. In general, for pharmaceutical compositions and vaccines comprising one or more polypeptides, the amount of each polypeptide present in a dose ranges from about 100 µg to 5 mg per kg of host. Suitable dose sizes will vary with the size of the patient, but will typically range from about 0.1 mL to about 5 mL.

In general, an appropriate dosage and treatment regimen provides the active compound(s) in an amount sufficient to provide therapeutic and/or prophylactic benefit. Such

a response can be monitored by establishing an improved clinical outcome (e.g., more frequent remissions, complete or partial, or longer disease-free survival) in treated patients as compared to non-treated patients. Increases in preexisting immune responses to a prostate tumor protein generally correlate with an improved clinical outcome. Such immune responses may generally be evaluated using standard proliferation, cytotoxicity or cytokine assays, which may be performed using samples obtained from a patient before and after treatment.

METHODS FOR DETECTING CANCER

In general, a cancer may be detected in a patient based on the presence of one or more prostate tumor proteins and/or polynucleotides encoding such proteins in a biological sample (for example, blood, sera, urine and/or tumor biopsies) obtained from the patient. In other words, such proteins may be used as markers to indicate the presence or absence of a cancer such as prostate cancer. In addition, such proteins may be useful for the detection of other cancers. The binding agents provided herein generally permit detection of the level of antigen that binds to the agent in the biological sample. Polynucleotide primers and probes may be used to detect the level of mRNA encoding a tumor protein, which is also indicative of the presence or absence of a cancer. In general, a prostate tumor sequence should be present at a level that is at least three fold higher in tumor tissue than in normal tissue

There are a variety of assay formats known to those of ordinary skill in the art for using a binding agent to detect polypeptide markers in a sample. See, e.g., Harlow and Lane, Antibodies: A Laboratory Manual, Cold Spring Harbor Laboratory, 1988. In general, the presence or absence of a cancer in a patient may be determined by (a) contacting a biological sample obtained from a patient with a binding agent; (b) detecting in the sample a level of polypeptide that binds to the binding agent; and (c) comparing the level of polypeptide with a predetermined cut-off value.

In a preferred embodiment, the assay involves the use of binding agent immobilized on a solid support to bind to and remove the polypeptide from the remainder of the sample. The bound polypeptide may then be detected using a detection reagent that contains a reporter group and specifically binds to the binding agent/polypeptide complex. Such detection reagents may comprise, for example, a binding agent that specifically binds to the polypeptide or an antibody or other agent that specifically binds to the binding agent, such as an anti-immunoglobulin, protein G, protein A or a lectin. Alternatively, a competitive assay may be utilized, in which a polypeptide is labeled with a reporter group and allowed to bind to the immobilized binding agent after incubation of the binding agent with the sample. The extent to which components of the sample inhibit the binding of the labeled polypeptide to the binding agent is indicative of the reactivity of the sample with the immobilized binding

agent. Suitable polypeptides for use within such assays include full length prostate tumor proteins and portions thereof to which the binding agent binds, as described above.

The solid support may be any material known to those of ordinary skill in the art to which the tumor protein may be attached. For example, the solid support may be a test well in a microtiter plate or a nitrocellulose or other suitable membrane. Alternatively, the support may be a bead or disc, such as glass, fiberglass, latex or a plastic material such as polystyrene or polyvinylchloride. The support may also be a magnetic particle or a fiber optic sensor, such as those disclosed, for example, in U.S. Patent No. 5,359,681. The binding agent may be immobilized on the solid support using a variety of techniques known to those of skill in the art, which are amply described in the patent and scientific literature. In the context of the present invention, the term "immobilization" refers to both noncovalent association, such as adsorption, and covalent attachment (which may be a direct linkage between the agent and functional groups on the support or may be a linkage by way of a cross-linking agent). Immobilization by adsorption to a well in a microtiter plate or to a membrane is preferred. In such cases, adsorption may be achieved by contacting the binding agent, in a suitable buffer, with the solid support for a suitable amount of time. The contact time varies with temperature, but is typically between about 1 hour and about 1 day. In general, contacting a well of a plastic microtiter plate (such as polystyrene or polyvinylchloride) with an amount of binding agent ranging from about 10 ng to about 10 μ g, and preferably about 100 ng to about 1 µg, is sufficient to immobilize an adequate amount of binding agent.

Covalent attachment of binding agent to a solid support may generally be achieved by first reacting the support with a bifunctional reagent that will react with both the support and a functional group, such as a hydroxyl or amino group, on the binding agent. For example, the binding agent may be covalently attached to supports having an appropriate polymer coating using benzoquinone or by condensation of an aldehyde group on the support with an amine and an active hydrogen on the binding partner (see, e.g., Pierce Immunotechnology Catalog and Handbook, 1991, at A12-A13).

In certain embodiments, the assay is a two-antibody sandwich assay. This assay may be performed by first contacting an antibody that has been immobilized on a solid support, commonly the well of a microtiter plate, with the sample, such that polypeptides within the sample are allowed to bind to the immobilized antibody. Unbound sample is then removed from the immobilized polypeptide-antibody complexes and a detection reagent (preferably a second antibody capable of binding to a different site on the polypeptide) containing a reporter group is added. The amount of detection reagent that remains bound to the solid support is then determined using a method appropriate for the specific reporter group.

More specifically, once the antibody is immobilized on the support as described above, the remaining protein binding sites on the support are typically blocked. Any suitable blocking agent known to those of ordinary skill in the art, such as bovine serum albumin or Tween 20TM (Sigma Chemical Co., St. Louis, MO). The immobilized antibody is then incubated with the sample, and polypeptide is allowed to bind to the antibody. The sample may be diluted with a suitable diluent, such as phosphate-buffered saline (PBS) prior to incubation. In general, an appropriate contact time (i.e., incubation time) is a period of time that is sufficient to detect the presence of polypeptide within a sample obtained from an individual with prostate cancer. Preferably, the contact time is sufficient to achieve a level of binding that is at least about 95% of that achieved at equilibrium between bound and unbound polypeptide. Those of ordinary skill in the art will recognize that the time necessary to achieve equilibrium may be readily determined by assaying the level of binding that occurs over a period of time. At room temperature, an incubation time of about 30 minutes is generally sufficient.

Unbound sample may then be removed by washing the solid support with an appropriate buffer, such as PBS containing 0.1% Tween 20^{TM} . The second antibody, which contains a reporter group, may then be added to the solid support. Preferred reporter groups include those groups recited above.

The detection reagent is then incubated with the immobilized antibody-polypeptide complex for an amount of time sufficient to detect the bound polypeptide. An appropriate amount of time may generally be determined by assaying the level of binding that occurs over a period of time. Unbound detection reagent is then removed and bound detection reagent is detected using the reporter group. The method employed for detecting the reporter group depends upon the nature of the reporter group. For radioactive groups, scintillation counting or autoradiographic methods are generally appropriate. Spectroscopic methods may be used to detect dyes, luminescent groups and fluorescent groups. Biotin may be detected using avidin, coupled to a different reporter group (commonly a radioactive or fluorescent group or an enzyme). Enzyme reporter groups may generally be detected by the addition of substrate (generally for a specific period of time), followed by spectroscopic or other analysis of the reaction products.

To determine the presence or absence of a cancer, such as prostate cancer, the signal detected from the reporter group that remains bound to the solid support is generally compared to a signal that corresponds to a predetermined cut-off value. In one preferred embodiment, the cut-off value for the detection of a cancer is the average mean signal obtained when the immobilized antibody is incubated with samples from patients without the cancer. In general, a sample generating a signal that is three standard deviations above the predetermined cut-off value is considered positive for the cancer. In an alternate preferred

embodiment, the cut-off value is determined using a Receiver Operator Curve, according to the method of Sackett et al., Clinical Epidemiology: A Basic Science for Clinical Medicine, Little Brown and Co., 1985, p. 106-7. Briefly, in this embodiment, the cut-off value may be determined from a plot of pairs of true positive rates (i.e., sensitivity) and false positive rates (100%-specificity) that correspond to each possible cut-off value for the diagnostic test result. The cut-off value on the plot that is the closest to the upper left-hand corner (i.e., the value that encloses the largest area) is the most accurate cut-off value, and a sample generating a signal that is higher than the cut-off value determined by this method may be considered positive. Alternatively, the cut-off value may be shifted to the left along the plot, to minimize the false positive rate, or to the right, to minimize the false negative rate. In general, a sample generating a signal that is higher than the cut-off value determined by this method is considered positive for a cancer.

In a related embodiment, the assay is performed in a flow-through or strip test format, wherein the binding agent is immobilized on a membrane, such as nitrocellulose. In the flow-through test, polypeptides within the sample bind to the immobilized binding agent as the sample passes through the membrane. A second, labeled binding agent then binds to the binding agent-polypeptide complex as a solution containing the second binding agent flows through the membrane. The detection of bound second binding agent may then be performed as described above. In the strip test format, one end of the membrane to which binding agent is bound is immersed in a solution containing the sample. The sample migrates along the membrane through a region containing second binding agent and to the area of immobilized binding agent. Concentration of second binding agent at the area of immobilized antibody indicates the presence of a cancer. Typically, the concentration of second binding agent at that site generates a pattern, such as a line, that can be read visually. The absence of such a pattern indicates a negative result. In general, the amount of binding agent immobilized on the membrane is selected to generate a visually discernible pattern when the biological sample contains a level of polypeptide that would be sufficient to generate a positive signal in the two-antibody sandwich assay, in the format discussed above. Preferred binding agents for use in such assays are antibodies and antigen-binding fragments thereof. Preferably, the amount of antibody immobilized on the membrane ranges from about 25 ng to about 1µg, and more preferably from about 50 ng to about 500 ng. Such tests can typically be performed with a very small amount of biological sample.

Of course, numerous other assay protocols exist that are suitable for use with the tumor proteins or binding agents of the present invention. The above descriptions are intended to be exemplary only. For example, it will be apparent to those of ordinary skill in the art that the above protocols may be readily modified to use prostate tumor polypeptides to detect antibodies that bind to such polypeptides in a biological sample. The detection of such prostate tumor protein specific antibodies may correlate with the presence of a cancer.

A cancer may also, or alternatively, be detected based on the presence of T cells that specifically react with a prostate tumor protein in a biological sample. Within certain methods, a biological sample comprising CD4⁺ and/or CD8⁺ T cells isolated from a patient is incubated with a prostate tumor polypeptide, a polynucleotide encoding such a polypeptide and/or an APC that expresses at least an immunogenic portion of such a polypeptide, and the presence or absence of specific activation of the T cells is detected. Suitable biological samples include, but are not limited to, isolated T cells. For example, T cells may be isolated from a patient by routine techniques (such as by Ficoll/Hypaque density gradient centrifugation of peripheral blood lymphocytes). T cells may be incubated in vitro for 2-9 days (typically 4 days) at 37°C with prostate tumor polypeptide (e.g., 5 - 25 μg/ml). It may be desirable to incubate another aliquot of a T cell sample in the absence of prostate tumor polypeptide to serve as a control. For CD4⁺ T cells, activation is preferably detected by evaluating proliferation of the T cells. For CD8+ T cells, activation is preferably detected by evaluating cytolytic activity. A level of proliferation that is at least two fold greater and/or a level of cytolytic activity that is at least 20% greater than in disease-free patients indicates the presence of a cancer in the patient.

As noted above, a cancer may also, or alternatively, be detected based on the level of mRNA encoding a prostate tumor protein in a biological sample. For example, at least two oligonucleotide primers may be employed in a polymerase chain reaction (PCR) based assay to amplify a portion of a prostate tumor cDNA derived from a biological sample, wherein at least one of the oligonucleotide primers is specific for (*i.e.*, hybridizes to) a polynucleotide encoding the prostate tumor protein. The amplified cDNA is then separated and detected using techniques well known in the art, such as gel electrophoresis. Similarly, oligonucleotide probes that specifically hybridize to a polynucleotide encoding a prostate tumor protein may be used in a hybridization assay to detect the presence of polynucleotide encoding the tumor protein in a biological sample.

To permit hybridization under assay conditions, oligonucleotide primers and probes should comprise an oligonucleotide sequence that has at least about 60%, preferably at least about 75% and more preferably at least about 90%, identity to a portion of a polynucleotide encoding a prostate tumor protein that is at least 10 nucleotides, and preferably at least 20 nucleotides, in length. Preferably, oligonucleotide primers and/or probes will hybridize to a polynucleotide encoding a polypeptide disclosed herein under moderately stringent conditions, as defined above. Oligonucleotide primers and/or probes which may be usefully employed in the diagnostic methods described herein preferably are at least 10-40 nucleotides in length. In a preferred embodiment, the oligonucleotide primers

comprise at least 10 contiguous nucleotides, more preferably at least 15 contiguous nucleotides, of a DNA molecule having a sequence recited in SEQ ID NO: 1-111, 115-171, 173-175, 177, 179-305, 307-315, 326, 328, 330, 332-335, 340-375 and 381. Techniques for both PCR based assays and hybridization assays are well known in the art (see, for example, Mullis et al., Cold Spring Harbor Symp. Quant. Biol., 51:263, 1987; Erlich ed., PCR Technology, Stockton Press, NY, 1989).

One preferred assay employs RT-PCR, in which PCR is applied in conjunction with reverse transcription. Typically, RNA is extracted from a biological sample, such as biopsy tissue, and is reverse transcribed to produce cDNA molecules. PCR amplification using at least one specific primer generates a cDNA molecule, which may be separated and visualized using, for example, gel electrophoresis. Amplification may be performed on biological samples taken from a test patient and from an individual who is not afflicted with a cancer. The amplification reaction may be performed on several dilutions of cDNA spanning two orders of magnitude. A two-fold or greater increase in expression in several dilutions of the test patient sample as compared to the same dilutions of the non-cancerous sample is typically considered positive.

In another embodiment, the disclosed compositions may be used as markers for the progression of cancer. In this embodiment, assays as described above for the diagnosis of a cancer may be performed over time, and the change in the level of reactive polypeptide(s) or polynucleotide evaluated. For example, the assays may be performed every 24-72 hours for a period of 6 months to 1 year, and thereafter performed as needed. In general, a cancer is progressing in those patients in whom the level of polypeptide or polynucleotide detected increases over time. In contrast, the cancer is not progressing when the level of reactive polypeptide or polynucleotide either remains constant or decreases with time.

Certain *in vivo* diagnostic assays may be performed directly on a tumor. One such assay involves contacting tumor cells with a binding agent. The bound binding agent may then be detected directly or indirectly via a reporter group. Such binding agents may also be used in histological applications. Alternatively, polynucleotide probes may be used within such applications.

As noted above, to improve sensitivity, multiple prostate tumor protein markers may be assayed within a given sample. It will be apparent that binding agents specific for different proteins provided herein may be combined within a single assay. Further, multiple primers or probes may be used concurrently. The selection of tumor protein markers may be based on routine experiments to determine combinations that results in optimal sensitivity. In addition, or alternatively, assays for tumor proteins provided herein may be combined with assays for other known tumor antigens.

DIAGNOSTIC KITS

The present invention further provides kits for use within any of the above diagnostic methods. Such kits typically comprise two or more components necessary for performing a diagnostic assay. Components may be compounds, reagents, containers and/or equipment. For example, one container within a kit may contain a monoclonal antibody or fragment thereof that specifically binds to a prostate tumor protein. Such antibodies or fragments may be provided attached to a support material, as described above. One or more additional containers may enclose elements, such as reagents or buffers, to be used in the assay. Such kits may also, or alternatively, contain a detection reagent as described above that contains a reporter group suitable for direct or indirect detection of antibody binding.

Alternatively, a kit may be designed to detect the level of mRNA encoding a prostate tumor protein in a biological sample. Such kits generally comprise at least one oligonucleotide probe or primer, as described above, that hybridizes to a polynucleotide encoding a prostate tumor protein. Such an oligonucleotide may be used, for example, within a PCR or hybridization assay. Additional components that may be present within such kits include a second oligonucleotide and/or a diagnostic reagent or container to facilitate the detection of a polynucleotide encoding a prostate tumor protein.

The following Examples are offered by way of illustration and not by way of limitation.

EXAMPLES

EXAMPLE 1

ISOLATION AND CHARACTERIZATION OF PROSTATE TUMOR POLYPEPTIDES

This Example describes the isolation of certain prostate tumor polypeptides from a prostate tumor cDNA library.

A human prostate tumor cDNA expression library was constructed from prostate tumor poly A⁺ RNA using a Superscript Plasmid System for cDNA Synthesis and Plasmid Cloning kit (BRL Life Technologies, Gaithersburg, MD 20897) following the manufacturer's protocol. Specifically, prostate tumor tissues were homogenized with polytron (Kinematica, Switzerland) and total RNA was extracted using Trizol reagent (BRL Life Technologies) as directed by the manufacturer. The poly A⁺ RNA was then purified using a Qiagen oligotex spin column mRNA purification kit (Qiagen, Santa Clarita, CA 91355) according to the manufacturer's protocol. First-strand cDNA was synthesized using the Notl/Oligo-dT18 primer. Double-stranded cDNA was synthesized, ligated with EcoRI/BAXI adaptors (Invitrogen, San Diego, CA) and digested with Notl. Following size fractionation with Chroma Spin-1000 columns (Clontech, Palo Alto, CA), the cDNA was ligated into the EcoRI/NotI site of pCDNA3.1 (Invitrogen) and transformed into ElectroMax *E. coli* DH10B cells (BRL Life Technologies) by electroporation.

Using the same procedure, a normal human pancreas cDNA expression library was prepared from a pool of six tissue specimens (Clontech). The cDNA libraries were characterized by determining the number of independent colonies, the percentage of clones that carried insert, the average insert size and by sequence analysis. The prostate tumor library contained 1.64 x 10⁷ independent colonies, with 70% of clones having an insert and the average insert size being 1745 base pairs. The normal pancreas cDNA library contained 3.3 x 10⁶ independent colonies, with 69% of clones having inserts and the average insert size being 1120 base pairs. For both libraries, sequence analysis showed that the majority of clones had a full length cDNA sequence and were synthesized from mRNA, with minimal rRNA and mitochondrial DNA contamination.

cDNA library subtraction was performed using the above prostate tumor and normal pancreas cDNA libraries, as described by Hara et al. (Blood, 84:189-199, 1994) with some modifications. Specifically, a prostate tumor-specific subtracted cDNA library was generated as follows. Normal pancreas cDNA library (70 µg) was digested with EcoRI, NotI, and SfuI, followed by a filling-in reaction with DNA polymerase Klenow fragment. After phenol-chloroform extraction and ethanol precipitation, the DNA was dissolved in 100 µl of

 H_2O , heat-denatured and mixed with 100 µl (100 µg) of Photoprobe biotin (Vector Laboratories, Burlingame, CA). As recommended by the manufacturer, the resulting mixture was irradiated with a 270 W sunlamp on ice for 20 minutes. Additional Photoprobe biotin (50 µl) was added and the biotinylation reaction was repeated. After extraction with butanol five times, the DNA was ethanol-precipitated and dissolved in 23 µl H_2O to form the driver DNA.

To form the tracer DNA, 10 μg prostate tumor cDNA library was digested with BamHI and XhoI, phenol chloroform extracted and passed through Chroma spin-400 columns (Clontech). Following ethanol precipitation, the tracer DNA was dissolved in 5 μl H₂O. Tracer DNA was mixed with 15 μl driver DNA and 20 μl of 2 x hybridization buffer (1.5 M NaCl/10 mM EDTA/50 mM HEPES pH 7.5/0.2% sodium dodecyl sulfate), overlaid with mineral oil, and heat-denatured completely. The sample was immediately transferred into a 68 °C water bath and incubated for 20 hours (long hybridization [LH]). The reaction mixture was then subjected to a streptavidin treatment followed by phenol/chloroform extraction. This process was repeated three more times. Subtracted DNA was precipitated, dissolved in 12 μl H₂O, mixed with 8 μl driver DNA and 20 μl of 2 x hybridization buffer, and subjected to a hybridization at 68 °C for 2 hours (short hybridization [SH]). After removal of biotinylated double-stranded DNA, subtracted cDNA was ligated into BamHI/XhoI site of chloramphenicol resistant pBCSK* (Stratagene, La Jolla, CA 92037) and transformed into ElectroMax *E. coli* DH10B cells by electroporation to generate a prostate tumor specific subtracted cDNA library (referred to as "prostate subtraction 1").

To analyze the subtracted cDNA library, plasmid DNA was prepared from 100 independent clones, randomly picked from the subtracted prostate tumor specific library and grouped based on insert size. Representative cDNA clones were further characterized by DNA sequencing with a Perkin Elmer/Applied Biosystems Division Automated Sequencer Model 373A (Foster City, CA). Six cDNA clones, hereinafter referred to as F1-13, F1-12, F1-16, H1-1, H1-9 and H1-4, were shown to be abundant in the subtracted prostate-specific cDNA library. The determined 3' and 5' cDNA sequences for F1-12 are provided in SEQ ID NO: 2 and 3, respectively, with determined 3' cDNA sequences for F1-13, F1-16, H1-1, H1-9 and H1-4 being provided in SEQ ID NO: 1 and 4-7, respectively.

The cDNA sequences for the isolated clones were compared to known sequences in the gene bank using the EMBL and GenBank databases (release 96). Four of the prostate tumor cDNA clones, F1-13, F1-16, H1-1, and H1-4, were determined to encode the following previously identified proteins: prostate specific antigen (PSA), human glandular kallikrein, human tumor expression enhanced gene, and mitochondria cytochrome C oxidase subunit II. H1-9 was found to be identical to a previously identified human

autonomously replicating sequence. No significant homologies to the cDNA sequence for F1-12 were found.

Subsequent studies led to the isolation of a full-length cDNA sequence for F1-12. This sequence is provided in SEQ ID NO: 107, with the corresponding predicted amino acid sequence being provided in SEQ ID NO: 108.

To clone less abundant prostate tumor specific genes, cDNA library subtraction was performed by subtracting the prostate tumor cDNA library described above with the normal pancreas cDNA library and with the three most abundant genes in the previously subtracted prostate tumor specific cDNA library: human glandular kallikrein, prostate specific antigen (PSA), and mitochondria cytochrome C oxidase subunit II. Specifically, 1 µg each of human glandular kallikrein, PSA and mitochondria cytochrome C oxidase subunit II cDNAs in pCDNA3.1 were added to the driver DNA and subtraction was performed as described above to provide a second subtracted cDNA library hereinafter referred to as the "subtracted prostate tumor specific cDNA library with spike".

Twenty-two cDNA clones were isolated from the subtracted prostate tumor specific cDNA library with spike. The determined 3' and 5' cDNA sequences for the clones referred to as J1-17, L1-12, N1-1862, J1-13, J1-19, J1-25, J1-24, K1-58, K1-63, L1-4 and L1-14 are provided in SEQ ID NOS: 8-9, 10-11, 12-13, 14-15, 16-17, 18-19, 20-21, 22-23, 24-25, 26-27 and 28-29, respectively. The determined 3' cDNA sequences for the clones referred to as J1-12, J1-16, J1-21, K1-48, K1-55, L1-2, L1-6, N1-1858, N1-1860, N1-1861, N1-1864 are provided in SEQ ID NOS: 30-40, respectively. Comparison of these sequences with those in the gene bank as described above, revealed no significant homologies to three of the five most abundant DNA species, (J1-17, L1-12 and N1-1862; SEQ ID NOS: 8-9, 10-11 and 12-13, respectively). Of the remaining two most abundant species, one (J1-12; SEQ ID NO:30) was found to be identical to the previously identified human pulmonary surfactant-associated protein, and the other (K1-48; SEQ ID NO:33) was determined to have some homology to R. norvegicus mRNA for 2-arylpropionyl-CoA epimerase. Of the 17 less abundant cDNA clones isolated from the subtracted prostate tumor specific cDNA library with spike, four (J1-16, K1-55, L1-6 and N1-1864; SEQ ID NOS:31, 34, 36 and 40, respectively) were found to be identical to previously identified sequences, two (J1-21 and N1-1860; SEQ ID NOS: 32 and 38, respectively) were found to show some homology to non-human sequences, and two (L1-2 and N1-1861; SEQ ID NOS: 35 and 39, respectively) were found to show some homology to known human sequences. No significant homologies were found to the polypeptides J1-13, J1-19, J1-24, J1-25, K1-58, K1-63, L1-4, L1-14 (SEQ ID NOS: 14-15, 16-17, 20-21, 18-19, 22-23, 24-25, 26-27, 28-29, respectively).

Subsequent studies led to the isolation of full length cDNA sequences for J1-17, L1-12 and N1-1862 (SEQ ID NOS: 109-111, respectively). The corresponding predicted

amino acid sequences are provided in SEQ ID NOS: 112-114. L1-12 is also referred to as P501S.

In a further experiment, four additional clones were identified by subtracting a prostate tumor cDNA library with normal prostate cDNA prepared from a pool of three normal prostate poly A+ RNA (referred to as "prostate subtraction 2"). The determined cDNA sequences for these clones, hereinafter referred to as U1-3064, U1-3065, V1-3692 and 1A-3905, are provided in SEQ ID NO: 69-72, respectively. Comparison of the determined sequences with those in the gene bank revealed no significant homologies to U1-3065.

A second subtraction with spike (referred to as "prostate subtraction spike 2") was performed by subtracting a prostate tumor specific cDNA library with spike with normal pancreas cDNA library and further spiked with PSA, J1-17, pulmonary surfactant-associated protein, mitochondrial DNA, cytochrome c oxidase subunit II, N1-1862, autonomously replicating sequence, L1-12 and tumor expression enhanced gene. Four additional clones, hereinafter referred to as V1-3686, R1-2330, 1B-3976 and V1-3679, were isolated. The determined cDNA sequences for these clones are provided in SEQ ID NO:73-76, respectively. Comparison of these sequences with those in the gene bank revealed no significant homologies to V1-3686 and R1-2330.

Further analysis of the three prostate subtractions described above (prostate subtraction 2, subtracted prostate tumor specific cDNA library with spike, and prostate subtraction spike 2) resulted in the identification of sixteen additional clones, referred to as 1G-4736, 1G-4738, 1G-4741, 1G-4744, 1G-4734, 1H-4774, 1H-4781, 1H-4785, 1H-4787, 1H-4796, 1I-4810, 1I-4811, 1J-4876, 1K-4884 and 1K-4896. The determined cDNA sequences for these clones are provided in SEQ ID NOS: 77-92, respectively. Comparison of these sequences with those in the gene bank as described above, revealed no significant homologies to 1G-4741, 1G-4734, 1I-4807, 1J-4876 and 1K-4896 (SEQ ID NOS: 79, 81, 87, 90 and 92, respectively). Further analysis of the isolated clones led to the determination of extended cDNA sequences for 1G-4736, 1G-4738, 1G-4741, 1G-4744, 1H-4774, 1H-4781, 1H-4785, 1H-4787, 1H-4796, 1I-4807, 1J-4876, 1K-4884 and 1K-4896, provided in SEQ ID NOS: 179-188 and 191-193, respectively, and to the determination of additional partial cDNA sequences for 1I-4810 and 1I-4811, provided in SEQ ID NOS: 189 and 190, respectively.

Additional studies with prostate subtraction spike 2 resulted in the isolation of three more clones. Their sequences were determined as described above and compared to the most recent GenBank. All three clones were found to have homology to known genes, which are Cysteine-rich protein, KIAA0242, and KIAA0280 (SEQ ID NO: 317, 319, and 320, respectively). Further analysis of these clones by Synteni microarray (Synteni, Palo Alto, CA) demonstrated that all three clones were over-expressed in most prostate tumors and

prostate BPH, as well as in the majority of normal prostate tissues tested, but low expression in all other normal tissues.

An additional subtraction was performed by subtracting a normal prostate cDNA library with normal pancreas cDNA (referred to as "prostate subtraction 3"). This led to the identification of six additional clones referred to as 1G-4761, 1G-4762, 1H-4766, 1H-4770, 1H-4771 and 1H-4772 (SEQ ID NOS: 93-98). Comparison of these sequences with those in the gene bank revealed no significant homologies to 1G-4761 and 1H-4771 (SEQ ID NOS: 93 and 97, respectively). Further analysis of the isolated clones led to the determination of extended cDNA sequences for 1G-4761, 1G-4762, 1H-4766 and 1H-4772 provided in SEQ ID NOS: 194-196 and 199, respectively, and to the determination of additional partial cDNA sequences for 1H-4770 and 1H-4771, provided in SEQ ID NOS: 197 and 198, respectively.

Subtraction of a prostate tumor cDNA library, prepared from a pool of polyA+RNA from three prostate cancer patients, with a normal pancreas cDNA library (prostate subtraction 4) led to the identification of eight clones, referred to as 1D-4297, 1D-4309, 1D.1-4278, 1D-4283, 1D-4283, 1D-4304, 1D-4296 and 1D-4280 (SEQ ID NOS: 99-107). These sequences were compared to those in the gene bank as described above. No significant homologies were found to 1D-4283 and 1D-4304 (SEQ ID NOS: 103 and 104, respectively). Further analysis of the isolated clones led to the determination of extended cDNA sequences for 1D-4309, 1D.1-4278, 1D-4288, 1D-4283, 1D-4304, 1D-4296 and 1D-4280, provided in SEQ ID NOS: 200-206, respectively.

cDNA clones isolated in prostate subtraction 1 and prostate subtraction 2, described above, were colony PCR amplified and their mRNA expression levels in prostate tumor, normal prostate and in various other normal tissues were determined using microarray technology (Synteni, Palo Alto, CA). Briefly, the PCR amplification products were dotted onto slides in an array format, with each product occupying a unique location in the array. mRNA was extracted from the tissue sample to be tested, reverse transcribed, and fluorescent-labeled cDNA probes were generated. The microarrays were probed with the labeled cDNA probes, the slides scanned and fluorescence intensity was measured. This intensity correlates with the hybridization intensity. Two clones (referred to as P509S and P510S) were found to be over-expressed in prostate tumor and normal prostate and expressed at low levels in all other normal tissues tested (liver, pancreas, skin, bone marrow, brain, breast, adrenal gland, bladder, testes, salivary gland, large intestine, kidney, ovary, lung, spinal cord, skeletal muscle and colon). The determined cDNA sequences for P509S and P510S are provided in SEQ ID NO: 223 and 224, respectively. Comparison of these sequences with those in the gene bank as described above, revealed some homology to previously identified ESTs.

Additional, studies led to the isolation of the full-length cDNA sequence for P509S. This sequence is provided in SEQ ID NO: 332, with the corresponding predicted amino acid sequence being provided in SEQ ID NO: 339.

EXAMPLE 2 DETERMINATION OF TISSUE SPECIFICITY OF PROSTATE TUMOR POLYPEPTIDES

Using gene specific primers, mRNA expression levels for the representative prostate tumor polypeptides F1-16, H1-1, J1-17 (also referred to as P502S), L1-12 (also referred to as P501S), F1-12 (also referred to as P504S) and N1-1862 (also referred to as P503S) were examined in a variety of normal and tumor tissues using RT-PCR.

Briefly, total RNA was extracted from a variety of normal and tumor tissues using Trizol reagent as described above. First strand synthesis was carried out using 1-2 μ g of total RNA with SuperScript II reverse transcriptase (BRL Life Technologies) at 42 $^{\circ}$ C for one hour. The cDNA was then amplified by PCR with gene-specific primers. To ensure the semi-quantitative nature of the RT-PCR, β -actin was used as an internal control for each of the tissues examined. First, serial dilutions of the first strand cDNAs were prepared and RT-PCR assays were performed using β -actin specific primers. A dilution was then chosen that enabled the linear range amplification of the β -actin template and which was sensitive enough to reflect the differences in the initial copy numbers. Using these conditions, the β -actin levels were determined for each reverse transcription reaction from each tissue. DNA contamination was minimized by DNase treatment and by assuring a negative PCR result when using first strand cDNA that was prepared without adding reverse transcriptase.

mRNA Expression levels were examined in four different types of tumor tissue (prostate tumor from 2 patients, breast tumor from 3 patients, colon tumor, lung tumor), and sixteen different normal tissues, including prostate, colon, kidney, liver, lung, ovary, pancreas, skeletal muscle, skin, stomach, testes, bone marrow and brain. F1-16 was found to be expressed at high levels in prostate tumor tissue, colon tumor and normal prostate, and at lower levels in normal liver, skin and testes, with expression being undetectable in the other tissues examined. H1-1 was found to be expressed at high levels in prostate tumor, lung tumor, breast tumor, normal prostate, normal colon and normal brain, at much lower levels in normal lung, pancreas, skeletal muscle, skin, small intestine, bone marrow, and was not detected in the other tissues tested. J1-17 (P502S) and L1-12 (P501S) appear to be specifically over-expressed in prostate, with both genes being expressed at high levels in prostate tumor and normal prostate but at low to undetectable levels in all the other tissues examined. N1-1862 (P503S) was found to be over-expressed in 60% of prostate tumors and detectable in normal colon and kidney. The RT-PCR results thus indicate that

F1-16, H1-1, J1-17 (P502S), N1-1862 (P503S) and L1-12 (P501S) are either prostate specific or are expressed at significantly elevated levels in prostate.

Further RT-PCR studies showed that F1-12 (P504S) is over-expressed in 60% of prostate tumors, detectable in normal kidney but not detectable in all other tissues tested. Similarly, R1-2330 was shown to be over-expressed in 40% of prostate tumors, detectable in normal kidney and liver, but not detectable in all other tissues tested. U1-3064 was found to be over-expressed in 60% of prostate tumors, and also expressed in breast and colon tumors, but was not detectable in normal tissues.

RT-PCR characterization of R1-2330, U1-3064 and 1D-4279 showed that these three antigens are over-expressed in prostate and/or prostate tumors.

Northern analysis with four prostate tumors, two normal prostate samples, two BPH prostates, and normal colon, kidney, liver, lung, pancrease, skeletal muscle, brain, stomach, testes, small intestine and bone marrow, showed that L1-12 (P501S) is over-expressed in prostate tumors and normal prostate, while being undetectable in other normal tissues tested. J1-17 (P502S) was detected in two prostate tumors and not in the other tissues tested. N1-1862 (P503S) was found to be over-expressed in three prostate tumors and to be expressed in normal prostate, colon and kidney, but not in other tissues tested. F1-12 (P504S) was found to be highly expressed in two prostate tumors and to be undetectable in all other tissues tested.

The microarray technology described above was used to determine the expression levels of representative antigens described herein in prostate tumor, breast tumor and the following normal tissues: prostate, liver, pancreas, skin, bone marrow, brain, breast, adrenal gland, bladder, testes, salivary gland, large intestine, kidney, ovary, lung, spinal cord, skeletal muscle and colon. L1-12 (P501S) was found to be over-expressed in normal prostate and prostate tumor, with some expression being detected in normal skeletal muscle. Both J1-12 and F1-12 (P504S) were found to be over-expressed in prostate tumor, with expression being lower or undetectable in all other tissues tested. N1-1862 (P503S) was found to be expressed at high levels in prostate tumor and normal prostate, and at low levels in normal large intestine and normal colon, with expression being undetectable in all other tissues tested. R1-2330 was found to be over-expressed in prostate tumor and normal prostate, and to be expressed at lower levels in all other tissues tested. 1D-4279 was found to be over-expressed in prostate tumor and normal spinal cord, and to be undetectable in all other tissues tested.

Further microarray analysis to specifically address the extent to which P501S (SEQ ID NO: 110) was expressed in breast tumor revealed moderate over-expression not only in breast tumor, but also in metastatic breast tumor (2/31), with negligible to low expression

in normal tissues. This data suggests that P501S may be over-expressed in various breast tumors as well as in prostate tumors.

The expression levels of 32 ESTs (expressed sequence tags) described by Vasmatzis et al. (Proc. Natl. Acad. Sci. USA 95:300-304, 1998) in a variety of tumor and normal tissues were examined by microarray technology as described above. Two of these clones (referred to as P1000C and P1001C) were found to be over-expressed in prostate tumor and normal prostate, and expressed at low to undetectable levels in all other tissues tested (normal aorta, thymus, resting and activated PBMC, epithelial cells, spinal cord, adrenal gland, fetal tissues, skin, salivary gland, large intestine, bone marrow, liver, lung, dendritic cells, stomach, lymph nodes, brain, heart, small intestine, skeletal muscle, colon and kidney. The determined cDNA sequences for P1000C and P1001C are provided in SEQ ID NO: 384 and 472, respectively. The sequence of P1001C was found to show some homology to the previously isolated Human mRNA for JM27 protein. No significant homologies were found to the sequence of P1000C.

The expression of the polypeptide encoded by the full length cDNA sequence for F1-12 (also referred to as P504S; SEQ ID NO: 108) was investigated by immunohistochemical analysis. Rabbit-anti-P504S polyclonal antibodies were generated against the full length P504S protein by standard techniques. Subsequent isolation and characterization of the polyclonal antibodies were also performed by techniques well known in the art. Immunohistochemical analysis showed that the P504S polypeptide was expressed in 100% of prostate carcinoma samples tested (n=5).

The rabbit-anti-P504S polyclonal antibody did not appear to label benign prostate cells with the same cytoplasmic granular staining, but rather with light nuclear staining. Analysis of normal tissues revealed that the encoded polypeptide was found to be expressed in some, but not all normal human tissues. Positive cytoplasmic staining with rabbit-anti-P504S polyclonal antibody was found in normal human kidney, liver, brain, colon and lung-associated macrophages, whereas heart and bone marrow were negative.

This data indicates that the P504S polypeptide is present in prostate cancer tissues, and that there are qualitative and quantitative differences in the staining between benign prostatic hyperplasia tissues and prostate cancer tissues, suggesting that this polypeptide may be detected selectively in prostate tumors and therefore be useful in the diagnosis of prostate cancer.

EXAMPLE 3

ISOLATION AND CHARACTERIZATION OF PROSTATE TUMOR POLYPEPTIDES
BY PCR-BASED SUBTRACTION

A cDNA subtraction library, containing cDNA from normal prostate subtracted with ten other normal tissue cDNAs (brain, heart, kidney, liver, lung, ovary, placenta, skeletal muscle, spleen and thymus) and then submitted to a first round of PCR amplification, was purchased from Clontech. This library was subjected to a second round of PCR amplification, following the manufacturer's protocol. The resulting cDNA fragments were subcloned into the vector pT7 Blue T-vector (Novagen, Madison, WI) and transformed into XL-1 Blue MRF' E. coli (Stratagene). DNA was isolated from independent clones and sequenced using a Perkin Elmer/Applied Biosystems Division Automated Sequencer Model 373A.

Fifty-nine positive clones were sequenced. Comparison of the DNA sequences of these clones with those in the gene bank, as described above, revealed no significant homologies to 25 of these clones, hereinafter referred to as P5, P8, P9, P18, P20, P30, P34, P36, P38, P39, P42, P49, P50, P53, P55, P60, P64, P65, P73, P75, P76, P79 and P84. The determined cDNA sequences for these clones are provided in SEQ ID NO: 41-45, 47-52 and 54-65, respectively. P29, P47, P68, P80 and P82 (SEQ ID NO: 46, 53 and 66-68, respectively) were found to show some degree of homology to previously identified DNA sequences. To the best of the inventors' knowledge, none of these sequences have been previously shown to be present in prostate.

Further studies using the PCR-based methodology described above resulted in the isolation of more than 180 additional clones, of which 23 clones were found to show no significant homologies to known sequences. The determined cDNA sequences for these clones are provided in SEQ ID NO: 115-123, 127, 131, 137, 145, 147-151, 153, 156-158 and 160. Twenty-three clones (SEQ ID NO: 124-126, 128-130, 132-136, 138-144, 146, 152, 154, 155 and 159) were found to show some homology to previously identified ESTs. An additional ten clones (SEQ ID NO: 161-170) were found to have some degree of homology to known genes. Larger cDNA clones containing the P20 sequence represent splice variants of a gene referred to as P703P. The determined DNA sequence for the variants referred to as DE1, DE13 and DE14 are provided in SEQ ID NOS: 171, 175 and 177, respectively, with the corresponding predicted amino acid sequences being provided in SEQ ID NO: 172, 176 and 178, respectively. The determined cDNA sequence for an extended spliced form of P703 is provided in SEQ ID NO: 225. The DNA sequences for the splice variants referred to as DE2 and DE6 are provided in SEQ ID NOS: 173 and 174, respectively.

mRNA Expression levels for representative clones in tumor tissues (prostate (n=5), breast (n=2), colon and lung) normal tissues (prostate (n=5), colon, kidney, liver, lung (n=2), ovary (n=2), skeletal muscle, skin, stomach, small intestine and brain), and activated

and non-activated PBMC was determined by RT-PCR as described above. Expression was examined in one sample of each tissue type unless otherwise indicated.

P9 was found to be highly expressed in normal prostate and prostate tumor compared to all normal tissues tested except for normal colon which showed comparable expression. P20, a portion of the P703P gene, was found to be highly expressed in normal prostate and prostate tumor, compared to all twelve normal tissues tested. A modest increase in expression of P20 in breast tumor (n=2), colon tumor and lung tumor was seen compared to all normal tissues except lung (1 of 2). Increased expression of P18 was found in normal prostate, prostate tumor and breast tumor compared to other normal tissues except lung and stomach. A modest increase in expression of P5 was observed in normal prostate compared to most other normal tissues. However, some elevated expression was seen in normal lung and PBMC. Elevated expression of P5 was also observed in prostate tumors (2 of 5), breast tumor and one lung tumor sample. For P30, similar expression levels were seen in normal prostate and prostate tumor, compared to six of twelve other normal tissues tested. Increased expression was seen in breast tumors, one lung tumor sample and one colon tumor sample, and also in normal PBMC. P29 was found to be over-expressed in prostate tumor (5 of 5) and normal prostate (5 of 5) compared to the majority of normal tissues. substantial expression of P29 was observed in normal colon and normal lung (2 of 2). P80 was found to be over-expressed in prostate tumor (5 of 5) and normal prostate (5 of 5) compared to all other normal tissues tested, with increased expression also being seen in colon tumor.

Further studies resulted in the isolation of twelve additional clones, hereinafter referred to as 10-d8, 10-h10, 11-c8, 7-g6, 8-b5, 8-b6, 8-d4, 8-d9, 8-g3, 8-h11, 9-f12 and 9-f3. The determined DNA sequences for 10-d8, 10-h10, 11-c8, 8-d4, 8-d9, 8-h11, 9-f12 and 9-f3 are provided in SEQ ID NO: 207, 208, 209, 216, 217, 220, 221 and 222, respectively. The determined forward and reverse DNA sequences for 7-g6, 8-b5, 8-b6 and 8-g3 are provided in SEQ ID NO: 210 and 211; 212 and 213; 214 and 215; and 218 and 219, respectively. Comparison of these sequences with those in the gene bank revealed no significant homologies to the sequence of 9-f3. The clones 10-d8, 11-c8 and 8-h11 were found to show some homology to previously isolated ESTs, while 10-h10, 8-b5, 8-b6, 8-d4, 8-d9, 8-g3 and 9-f12 were found to show some homology to previously identified genes. Further characterization of 7-G6 and 8-G3 showed identity to the known genes PAP and PSA, respectively.

mRNA expression levels for these clones were determined using the micro-array technology described above. The clones 7-G6, 8-G3, 8-B5, 8-B6, 8-D4, 8-D9, 9-F3, 9-F12, 9-H3, 10-A2, 10-A4, 11-C9 and 11-F2 were found to be over-expressed in prostate tumor and normal prostate, with expression in other tissues tested being low or undetectable.

Increased expression of 8-F11 was seen in prostate tumor and normal prostate, bladder, skeletal muscle and colon. Increased expression of 10-H10 was seen in prostate tumor and normal prostate, bladder, lung, colon, brain and large intestine. Increased expression of 9-B1 was seen in prostate tumor, breast tumor, and normal prostate, salivary gland, large intestine and skin, with increased expression of 11-C8 being seen in prostate tumor, and normal prostate and large intestine.

An additional cDNA fragment derived from the PCR-based normal prostate subtraction, described above, was found to be prostate specific by both micro-array technology and RT-PCR. The determined cDNA sequence of this clone (referred to as 9-A11) is provided in SEQ ID NO: 226. Comparison of this sequence with those in the public databases revealed 99% identity to the known gene HOXB13.

Further studies led to the isolation of the clones 8-C6 and 8-H7. The determined cDNA sequences for these clones are provided in SEQ ID NO: 227 and 228, respectively. These sequences were found to show some homology to previously isolated ESTs.

PCR and hybridization-based methodologies were employed to obtain longer cDNA sequences for clone P20 (also referred to as P703P), yielding three additional cDNA fragments that progressively extend the 5' end of the gene. These fragments, referred to as P703PDE5, P703P6.26, and P703PX-23 (SEQ ID NO: 326, 328 and 330, with the predicted corresponding amino acid sequences being provided in SEQ ID NO: 327, 329 and 331, respectively) contain additional 5' sequence. P703PDE5 was recovered by screening of a cDNA library (#141-26) with a portion of P703P as a probe. P703P6.26 was recovered from a mixture of three prostate tumor cDNAs and P703PX_23 was recovered from cDNA library (#438-48). Together, the additional sequences include all of the putative mature serine protease along with part of the putative signal sequence. Further studies using a PCR-based subtraction library of a prostate tumor pool subtracted against a pool of normal tissues (referred to as JP: PCR subtraction) resulted in the isolation of thirteen additional clones, seven of which did not share any significant homology to known GenBank sequences. The determined cDNA sequences for these seven clones (P711P, P712P, novel 23, P774P, P775P, P710P and P768P) are provided in SEQ ID NO: 307-311, 313 and 315, respectively. The remaining six clones (SEQ ID NO: 316 and 321-325) were shown to share some homology to known genes. By microarray analysis, all thirteen clones showed three or more fold overexpression in prostate tissues, including prostate tumors, BPH and normal prostate as compared to normal non-prostate tissues. Clones P711P, P712P, novel 23 and P768P showed over-expression in most prostate tumors and BPH tissues tested (n=29), and in the majority of normal prostate tissues (n=4), but background to low expression levels in all normal tissues.

Clones P774P, P775P and P710P showed comparatively lower expression and expression in fewer prostate tumors and BPH samples, with negative to low expression in normal prostate.

The full-length cDNA for P711P was obtained by employing the partial sequence of SEQ ID NO: 307 to screen a prostate cDNA library. Specifically, a directionally cloned prostate cDNA library was prepared using standard techniques. One million colonies of this library were plated onto LB/Amp plates. Nylon membrane filters were used to lift these colonies, and the cDNAs which were picked up by these filters were denatured and cross-linked to the filters by UV light. The P711P cDNA fragment of SEQ ID NO: 307 was radio-labeled and used to hybridize with these filters. Positive clones were selected, and cDNAs were prepared and sequenced using an automatic Perkin Elmer/Applied Biosystems sequencer. The determined full-length sequence of P711P is provided in SEQ ID NO: 382, with the corresponding predicted amino acid sequence being provided in SEQ ID NO: 383.

Using PCR and hybridization-based methodologies, additional cDNA sequence information was derived for two clones described above, 11-C9 and 9-F3, herein after referred to as P707P and P714P, respectively (SEQ ID NO: 333 and 334). After comparison with the most recent GenBank, P707P was found to be a splice variant of the known gene HoxB13. In contrast, no significant homologies to P714P were found.

Clones 8-B3, P89, P98, P130 and P201 (as disclosed in U.S. Patent Application No. 09/020,956, filed February 9, 1998) were found to be contained within one contiguous sequence, referred to as P705P (SEQ ID NO: 335, with the predicted amino acid sequence provided in SEQ ID NO: 336), which was determined to be a splice variant of the known gene NKX 3.1.

EXAMPLE 4 SYNTHESIS OF POLYPEPTIDES

Polypeptides may be synthesized on a Perkin Elmer/Applied Biosystems 430A peptide synthesizer using FMOC chemistry with HPTU (O-Benzotriazole-N,N,N',N'-tetramethyluronium hexafluorophosphate) activation. A Gly-Cys-Gly sequence may be attached to the amino terminus of the peptide to provide a method of conjugation, binding to an immobilized surface, or labeling of the peptide. Cleavage of the peptides from the solid support may be carried out using the following cleavage mixture: trifluoroacetic acid:ethanedithiol:thioanisole:water:phenol (40:1:2:2:3). After cleaving for 2 hours, the peptides may be precipitated in cold methyl-t-butyl-ether. The peptide pellets may then be dissolved in water containing 0.1% trifluoroacetic acid (TFA) and lyophilized prior to purification by C18 reverse phase HPLC. A gradient of 0%-60% acetonitrile (containing 0.1% TFA) in water (containing 0.1% TFA) may be used to elute the peptides. Following

lyophilization of the pure fractions, the peptides may be characterized using electrospray or other types of mass spectrometry and by amino acid analysis.

EXAMPLE 5

FURTHER ISOLATION AND CHARACTERIZATION OF PROSTATE TUMOR POLYPEPTIDES BY PCR-BASED SUBTRACTION

A cDNA library generated from prostate primary tumor mRNA as described above was subtracted with cDNA from normal prostate. The subtraction was performed using a PCR-based protocol (Clontech), which was modified to generate larger fragments. Within this protocol, tester and driver double stranded cDNA were separately digested with five restriction enzymes that recognize six-nucleotide restriction sites (MluI, MscI, PvuII, SalI and StuI). This digestion resulted in an average cDNA size of 600 bp, rather than the average size of 300 bp that results from digestion with RsaI according to the Clontech protocol. This modification did not affect the subtraction efficiency. Two tester populations were then created with different adapters, and the driver library remained without adapters.

The tester and driver libraries were then hybridized using excess driver cDNA. In the first hybridization step, driver was separately hybridized with each of the two tester cDNA populations. This resulted in populations of (a) unhybridized tester cDNAs, (b) tester cDNAs hybridized to other tester cDNAs, (c) tester cDNAs hybridized to driver cDNAs and (d) unhybridized driver cDNAs. The two separate hybridization reactions were then combined, and rehybridized in the presence of additional denatured driver cDNA. Following this second hybridization, in addition to populations (a) through (d), a fifth population (e) was generated in which tester cDNA with one adapter hybridized to tester cDNA with the second adapter. Accordingly, the second hybridization step resulted in enrichment of differentially expressed sequences which could be used as templates for PCR amplification with adaptor-specific primers.

The ends were then filled in, and PCR amplification was performed using adaptor-specific primers. Only population (e), which contained tester cDNA that did not hybridize to driver cDNA, was amplified exponentially. A second PCR amplification step was then performed, to reduce background and further enrich differentially expressed sequences.

This PCR-based subtraction technique normalizes differentially expressed cDNAs so that rare transcripts that are overexpressed in prostate tumor tissue may be recoverable. Such transcripts would be difficult to recover by traditional subtraction methods.

In addition to genes known to be overexpressed in prostate tumor, seventy-seven further clones were identified. Sequences of these partial cDNAs are provided in SEQ ID NO: 29 to 305. Most of these clones had no significant homology to database sequences. Exceptions were JPTPN23 (SEQ ID NO: 231; similarity to pig valosin-containing protein), JPTPN30 (SEQ ID NO: 234; similarity to rat mRNA for proteasome subunit), JPTPN45 (SEQ ID NO: 243; similarity to rat norvegicus cytosolic NADP-dependent isocitrate dehydrogenase), JPTPN46 (SEQ ID NO: 244; similarity to human subclone H8 4 d4 DNA sequence), JP1D6 (SEQ ID NO: 265; similarity to G. gallus dynein light chain-A), JP8D6 (SEQ ID NO: 288; similarity to human BAC clone RG016J04), JP8F5 (SEQ ID NO: 289; similarity to human subclone H8 3 b5 DNA sequence), and JP8E9 (SEQ ID NO: 299; similarity to human Alu sequence).

Additional studies using the PCR-based subtraction library consisting of a prostate tumor pool subtracted against a normal prostate pool (referred to as PT-PN PCR subtraction) yielded three additional clones. Comparison of the cDNA sequences of these clones with the most recent release of GenBank revealed no significant homologies to the two clones referred to as P715P and P767P (SEQ ID NO: 312 and 314). The remaining clone was found to show some homology to the known gene KIAA0056 (SEQ ID NO: 318). Using microarray analysis to measure mRNA expression levels in various tissues, all three clones were found to be over-expressed in prostate tumors and BPH tissues. Specifically, clone P715P was over-expressed in most prostate tumors and BPH tissues by a factor of three or greater, with elevated expression seen in the majority of normal prostate samples and in fetal tissue, but negative to low expression in all other normal tissues. Clone P767P was over-expressed in several prostate tumors and BPH tissues, with moderate expression levels in half of the normal prostate samples, and background to low expression in all other normal tissues tested.

Further analysis, by microarray as described above, of the PT-PN PCR subtraction library and of a DNA subtraction library containing cDNA from prostate tumor subtracted with a pool of normal tissue cDNAs, led to the isolation of 27 additional clones (SEQ ID NO: 340-365 and 381) which were determined to be over-expressed in prostate tumor. The clones of SEQ ID NO: 341, 342, 345, 347, 348, 349, 351, 355-359, 361, 362 and 364 were also found to be expressed in normal prostate. Expression of all 26 clones in a variety of normal tissues was found to be low or undetectable, with the exception of P544S (SEQ ID NO: 356) which was found to be expressed in small intestine. Of the 26 clones, 10 (SEQ ID NO: 340-349) were found to show some homology to previously identified sequences. No significant homologies were found to the clones of SEQ ID NO: 350-365.

EXAMPLE 6 PEPTIDE PRIMING OF MICE AND PROPAGATION OF CTL LINES

6.1. This Example illustrates the preparation of a CTL cell line specific for cells expressing the P502S gene.

Mice expressing the transgene for human HLA A2.1 (provided by Dr L. Sherman, The Scripps Research Institute, La Jolla, CA) were immunized with P2S#12 peptide (VLGWVAEL; SEQ ID NO: 306), which is derived from the P502S gene (also referred to herein as J1-17, SEQ ID NO: 8), as described by Theobald et al., Proc. Natl. Acad. Sci. USA 92:11993-11997, 1995 with the following modifications. Mice were immunized with 100μg of P2S#12 and 120μg of an I-A^b binding peptide derived from hepatitis B Virus protein emulsified in incomplete Freund's adjuvant. Three weeks later these mice were sacrificed and using a nylon mesh single cell suspensions prepared. Cells were then resuspended at 6 x 106 cells/ml in complete media (RPMI-1640; Gibco BRL, Gaithersburg, MD) containing 10% FCS, 2mM Glutamine (Gibco BRL), sodium pyruvate (Gibco BRL), non-essential amino acids (Gibco BRL), 2 x 10⁻⁵ M 2-mercaptoethanol, 50U/ml penicillin and streptomycin, and cultured in the presence of irradiated (3000 rads) P2S#12-pulsed (5mg/ml P2S#12 and 10mg/ml β2-microglobulin) LPS blasts (A2 transgenic spleens cells cultured in the presence of $7\mu g/ml$ dextran sulfate and $25\mu g/ml$ LPS for 3 days). Six days later, cells (5 x 105/ml) were restimulated with 2.5 x 106/ml peptide pulsed irradiated (20,000 rads) EL4A2Kb cells (Sherman et al, Science 258:815-818, 1992) and 3 x 106/ml A2 transgenic spleen feeder cells. Cells were cultured in the presence of 20U/ml IL-2. Cells continued to be restimulated on a weekly basis as described, in preparation for cloning the line.

P2S#12 line was cloned by limiting dilution analysis with peptide pulsed EL4 A2Kb tumor cells (1 x 10^4 cells/ well) as stimulators and A2 transgenic spleen cells as feeders (5 x 10^5 cells/ well) grown in the presence of 30U/ml IL-2. On day 14, cells were

restimulated as before. On day 21, clones that were growing were isolated and maintained in culture. Several of these clones demonstrated significantly higher reactivity (lysis) against human fibroblasts (HLA A2.1 expressing) transduced with P502S than against control fibroblasts. An example is presented in Figure 1.

This data indicates that P2S #12 represents a naturally processed epitope of the P502S protein that is expressed in the context of the human HLA A2.1 molecule.

6.2. This Example illustrates the preparation of murine CTL lines and CTL clones specific for cells expressing the P501S gene.

This series of experiments were performed similarly to that described above. Mice were immunized with the P1S#10 peptide (SEQ ID NO: 337), which is derived from the P501S gene (also referred to herein as L1-12, SEQ ID NO: 110). The P1S#10 peptide was derived by analysis of the predicted polypeptide sequence for P501S for potential HLA-A2 binding sequences as defined by published HLA-A2 binding motifs (Parker, KC, et al, J. Immunol., 152:163, 1994). P1S#10 peptide was synthesized as described in Example 4, and empirically tested for HLA-A2 binding using a T cell based competition assay. Predicted A2 binding peptides were tested for their ability to compete HLA-A2 specific peptide presentation to an HLA-A2 restricted CTL clone (D150M58), which is specific for the HLA-A2 binding influenza matrix peptide fluM58. D150M58 CTL secretes TNF in response to self-presentation of peptide fluM58. In the competition assay, test peptides at 100-200 µg/ml were added to cultures of D150M58 CTL in order to bind HLA-A2 on the CTL. After thirty minutes, CTL cultured with test peptides, or control peptides, were tested for their antigen dose response to the fluM58 peptide in a standard TNF bioassay. As shown in Figure 3, peptide P1S#10 competes HLA-A2 restricted presentation of fluM58, demonstrating that peptide P1S#10 binds HLA-A2.

Mice expressing the transgene for human HLA A2.1 were immunized as described by Theobald et al. (*Proc. Natl. Acad. Sci. USA 92*:11993-11997, 1995) with the following modifications. Mice were immunized with 62.5μg of P1S #10 and 120μg of an I-A^b binding peptide derived from Hepatitis B Virus protein emulsified in incomplete Freund's adjuvant. Three weeks later these mice were sacrificed and single cell suspensions prepared using a nylon mesh. Cells were then resuspended at 6 x 10⁶ cells/ml in complete media (as described above) and cultured in the presence of irradiated (3000 rads) P1S#10-pulsed (2μ g/ml P1S#10 and 10mg/ml β2-microglobulin) LPS blasts (A2 transgenic spleens cells cultured in the presence of 7μg/ml dextran sulfate and 25μg/ml LPS for 3 days). Six days later cells (5 x 10⁵/ml) were restimulated with 2.5 x 10⁶/ml peptide-pulsed irradiated (20,000 rads) EL4A2Kb cells, as described above, and 3 x 10⁶/ml A2 transgenic spleen feeder cells. Cells were cultured in the presence of 20 U/ml IL-2. Cells were restimulated on a weekly

basis in preparation for cloning. After three rounds of *in vitro* stimulations, one line was generated that recognized P1S#10-pulsed Jurkat A2Kb targets and P501S-transduced Jurkat targets as shown in Figure 4.

A P1S#10-specific CTL line was cloned by limiting dilution analysis with peptide pulsed EL4 A2Kb tumor cells (1 x 10⁴ cells/ well) as stimulators and A2 transgenic spleen cells as feeders (5 x 10⁵ cells/ well) grown in the presence of 30U/ml IL-2. On day 14, cells were restimulated as before. On day 21, viable clones were isolated and maintained in culture. As shown in Figure 5, five of these clones demonstrated specific cytolytic reactivity against P501S-transduced Jurkat A2Kb targets. This data indicates that P1S#10 represents a naturally processed epitope of the P501S protein that is expressed in the context of the human HLA-A2.1 molecule.

EXAMPLE 7 ABILITY OF HUMAN T CELLS TO RECOGNIZE PROSTATE TUMOR POLYPEPTIDES

This Example illustrates the ability of T cells specific for a prostate tumor polypeptide to recognize human tumor.

Human CD8⁺ T cells were primed in vitro to the P2S-12 peptide (SEQ ID NO: 306) derived from P502S (also referred to as J1-17) using dendritic cells according to the protocol of Van Tsai et al. (Critical Reviews in Immunology 18:65-75, 1998). The resulting CD8+ T cell microcultures were tested for their ability to recognize the P2S-12 peptide presented by autologous fibroblasts or fibroblasts which were transduced to express the P502S gene in a γ-interferon ELISPOT assay (see Lalvani et al., J. Exp. Med. 186:859-865, 1997). Briefly, titrating numbers of T cells were assayed in duplicate on 104 fibroblasts in the presence of 3 μ g/ml human β_2 -microglobulin and 1 μ g/ml P2S-12 peptide or control E75 In addition, T cells were simultaneously assayed on autologous fibroblasts transduced with the P502S gene or as a control, fibroblasts transduced with HER-2/neu. Prior to the assay, the fibroblasts were treated with 10 ng/ml γ-interferon for 48 hours to upregulate class I MHC expression. One of the microcultures (#5) demonstrated strong recognition of both peptide pulsed fibroblasts as well as transduced fibroblasts in a γ-interferon ELISPOT assay. Figure 2A demonstrates that there was a strong increase in the number of y-interferon spots with increasing numbers of T cells on fibroblasts pulsed with the P2S-12 peptide (solid bars) but not with the control E75 peptide (open bars). This shows the ability of these T cells to specifically recognize the P2S-12 peptide. As shown in Figure 2B, this microculture also demonstrated an increase in the number of y-interferon spots with increasing numbers of T

cells on fibroblasts transduced to express the P502S gene but not the HER-2/neu gene. These results provide additional confirmatory evidence that the P2S-12 peptide is a naturally processed epitope of the P502S protein. Furthermore, this also demonstrates that there exists in the human T cell repertoire, high affinity T cells which are capable of recognizing this epitope. These T cells should also be capable of recognizing human tumors which express the P502S gene.

EXAMPLE 8 PRIMING OF CTL IN VIVO USING NAKED DNA IMMUNIZATION WITH A PROSTATE ANTIGEN

The prostate tumor antigen L1-12, as described above, is also referred to as P501S. HLA A2Kb Tg mice (provided by Dr L. Sherman, The Scripps Research Institute, La Jolla, CA) were immunized with 100 µg VR10132-P501S either intramuscularly or intradermally. The mice were immunized three times, with a two week interval between immunizations. Two weeks after the last immunization, immune spleen cells were cultured with Jurkat A2Kb-P501S transduced stimulator cells. CTL lines were stimulated weekly. After two weeks of *in vitro* stimulation, CTL activity was assessed against P501S transduced targets. Two out of 8 mice developed strong anti-P501S CTL responses. These results demonstrate that P501S contains at least one naturally processed A2-restricted CTL epitope.

EXAMPLE 9

GENERATION OF HUMAN CTL *IN VITRO* USING WHOLE GENE PRIMING AND STIMULATION TECHNIQUES WITH PROSTATE TUMOR ANTIGEN

Using *in vitro* whole-gene priming with P501S-retrovirally transduced autologous fibroblasts (see, for example, Yee et al, *The Journal of Immunology*, 157(9):4079-86, 1996), human CTL lines were derived that specifically recognize autologous fibroblasts transduced with P501S (also known as L1-12), as determined by interferon-γ ELISPOT analysis as described above. Using a panel of HLA-mismatched fibroblast lines transduced with P501S, these CTL lines were shown to be restricted HLA-A2 class I allele. Specifically, dendritic cells (DC) were differentiated from monocyte cultures derived from PBMC of normal human donors by growing for five days in RPMI medium containing 10% human serum, 50 ng/ml human GM-CSF and 30 ng/ml human IL-4. Following culture, DC were infected overnight with recombinant P501S vaccinia virus at a multiplicity of infection (M.O.I) of five, and matured overnight by the addition of 3 μg/ml CD40 ligand. Virus was inactivated by UV irradiation. CD8+ T cells were isolated using a magnetic bead system, and

priming cultures were initiated using standard culture techniques. Cultures were restimulated every 7-10 days using autologous primary fibroblasts retrovirally transduced with P501S. Following four stimulation cycles, CD8+ T cell lines were identified that specifically produced interferon-γ when stimulated with P501S-transduced autologous fibroblasts. The P501S-specific activity could be sustained by the continued stimulation of the cultures with P501S-transduced fibroblasts in the presence of IL-15. A panel of HLA-mismatched fibroblast lines transduced with P501S were generated to define the restriction allele of the response. By measuring interferon-γ in an ELISPOT assay, the P501S specific response was shown to be restricted by HLA-A2. These results demonstrate that a CD8+ CTL response to P501S can be elicited.

EXAMPLE 10

IDENTIFICATION OF A NATURALLY PROCESSED CTL EPITOPE CONTAINED WITHIN A PROSTATE TUMOR ANTIGEN

The 9-mer peptide p5 (SEQ ID NO: 338) was derived from the P703P antigen (also referred to as P20). The p5 peptide is immunogenic in human HLA-A2 donors and is a naturally processed epitope. Antigen specific CD8+ T cells can be primed following repeated in vitro stimulations with monocytes pulsed with p5 peptide. These CTL specifically recognize p5-pulsed target cells in both ELISPOT (as described above) and chromium release Additionally, immunization of HLA-A2 transgenic mice with p5 leads to the generation of CTL lines which recognize a variety of P703P transduced target cells expressing either HLA-A2Kb or HLA-A2. Specifically, HLA-A2 transgenic mice were immunized subcutaneously in the footpad with 100 µg of p5 peptide together with 140 µg of hepatitis B virus core peptide (a Th peptide) in Freund's incomplete adjuvant. Three weeks post immunization, spleen cells from immunized mice were stimulated in vitro with peptidepulsed LPS blasts. CTL activity was assessed by chromium release assay five days after primary in vitro stimulation. Retrovirally transduced cells expressing the control antigen P703P and HLA-A2Kb were used as targets. CTL lines that specifically recognized both p5pulsed targets as well as P703P-expressing targets were identified.

Human *in vitro* priming experiments demonstrated that the p5 peptide is immunogenic in humans. Dendritic cells (DC) were differentiated from monocyte cultures derived from PBMC of normal human donors by culturing for five days in RPMI medium containing 10% human serum, 50 ng/ml human GM-CSF and 30 ng/ml human IL-4. Following culture, the DC were pulsed with p5 peptide and cultured with GM-CSF and IL-4 together with CD8+ T cell enriched PBMC. CTL lines were restimulated on a weekly basis

with p5-pulsed monocytes. Five to six weeks after initiation of the CTL cultures, CTL recognition of p5-pulsed target cells was demonstrated.

EXAMPLE 11 EXPRESSION OF A BREAST TUMOR-DERIVED ANTIGEN IN PROSTATE

Isolation of the antigen B305D from breast tumor by differential display is described in US Patent Application No. 08/700,014, filed August 20, 1996. Several different splice forms of this antigen were isolated. The determined cDNA sequences for these splice forms are provided in SEQ ID NO: 366-375, with the predicted amino acid sequences corresponding to the sequences of SEQ ID NO: 292, 298 and 301-303 being provided in SEQ ID NO: 299-306, respectively.

The expression levels of B305D in a variety of tumor and normal tissues were examined by real time PCR and by Northern analysis. The results indicated that B305D is highly expressed in breast tumor, prostate tumor, normal prostate tumor and normal testes, with expression being low or undetectable in all other tissues examined (colon tumor, lung tumor, ovary tumor, and normal bone marrow, colon, kidney, liver, lung, ovary, skin, small intestine, stomach).

EXAMPLE 12

ELICITATION OF PROSTATE TUMOR ANTIGEN-SPECIFIC CTL RESPONSES IN HUMAN BLOOD

This Example illustrates the ability of a prostate tumor antigen to elicit a CTL response in blood of normal humans.

Autologous dendritic cells (DC) were differentiated from monocyte cultures derived from PBMC of normal donors by growth for five days in RPMI medium containing 10% human serum, 50 ng/ml GMCSF and 30 ng/ml IL-4. Following culture, DC were infected overnight with recombinant P501S-expressing vaccinia virus at an M.O.I. of 5 and matured for 8 hours by the addition of 2 micrograms/ml CD40 ligand. Virus was inactivated by UV irradiation, CD8⁺ cells were isolated by positive selection using magnetic beads, and priming cultures were initiated in 24-well plates. Following five stimulation cycles, CD8+ lines were identified that specifically produced interferon-gamma when stimulated with autologous P501S-transduced fibroblasts. The P501S-specific activity of cell line 3A-1 could be maintained following additional stimulation cycles on autologous B-LCL transduced with P501S. Line 3A-1 was shown to specifically recognize autologous B-LCL transduced to

express P501S, but not EGFP-transduced autologous B-LCL, as measured by cytotoxity assays (⁵¹Cr release) and interferon-gamma production (Interferon-gamma Elispot; see above and Lalvani et al., J. Exp. Med. 186:859-865, 1997). The results of these assays are presented in Figures 6A and 6B.

EXAMPLE 13 IDENTIFICATION OF PROSTATE TUMOR ANTIGENS BY MICROARRAY ANALYSIS

This Example describes the isolation of certain prostate tumor polypeptides from a prostate tumor cDNA library.

A human prostate tumor cDNA expression library as described above was screened using microarray analysis to identify clones that display at least a three fold over-expression in prostate tumor and/or normal prostate tissue, as compared to non-prostate normal tissues (not including testis). 372 clones were identified, and 319 were successfully sequenced. Table I presents a summary of these clones, which are shown in SEQ ID NOs:385-400. Of these sequences SEQ ID NOs:386, 389, 390 and 392 correspond to novel genes, and SEQ ID NOs: 393 and 396 correspond to previously identified sequences. The others (SEQ ID NOs:385, 387, 388, 391, 394, 395 and 397-400) correspond to known sequences, as shown in Table I.

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Table I
Summary of Prostate Tumor Antigens

Known Genes	Previously identified Genes	Novel
		Genes
T-cell gamma chain	P504S	23379 (SEQ
		ID NO:389)
Kallikrein	P1000C	23399 (SEQ
		ID NO:392)
Vector	P501S	23320 (SEQ
		ID NO:386)
CGI-82 protein mRNA (23319; SEQ ID	P503S	23381 (SEQ
NO:385)		ID NO:390)
PSA	P510S	
		ļ
Ald. 6 Dehyd.	P784P	_
Lide 12 date 1	, ,	
L-iditol-2 dehydrogenase (23376; SEQ ID NO:388)	P502S	
110.366)		
Ets transcription factor PDEF (22672; SEQ	P706P	
ID NO:398)	1 7001	
Í		
hTGR (22678; SEQ ID NO:399)	19142.2, bangur.seq (22621; SEQ	
	ID NO:396)	
KIAA0295(22685; SEQ ID NO:400)	5566.1 Wang(23404; SEQ ID	
	NO:393)	
Prostatic Acid Phosphatase(22655; SEQ ID	P712P	
NO:397)		

transglutaminase (22611; SEQ ID NO:395)	P778P	
HDLBP (23508; SEQ ID NO:394)		
CGI-69 Protein(23367; SEQ ID NO:387)		
KIAA0122(23383; SEQ ID NO:391)		
TEEG		

CGI-82 showed 4.06 fold over-expression in prostate tissues as compared to other normal tissues tested. It was over-expressed in 43% of prostate tumors, 25% normal prostate, not detected in other normal tissues tested. L-iditol-2 dehydrogenase showed 4.94 fold over-expression in prostate tissues as compared to other normal tissues tested. It was over-expressed in 90% of prostate tumors, 100% of normal prostate, and not detected in other normal tissues tested. Ets transcription factor PDEF showed 5.55 fold over-expression in prostate tissues as compared to other normal tissues tested. It was over-expressed in 47% prostate tumors, 25% normal prostate and not detected in other normal tissues tested. hTGR1 showed 9.11 fold over-expression in prostate tissues as compared to other normal tissues tested. It was over-expressed in 63% of prostate tumors and is not detected in normal tissues tested including normal prostate. KIAA0295 showed 5.59 fold over-expression in prostate tissues as compared to other normal tissues tested. It was over-expressed in 47% of prostate tumors, low to undetectable in normal tissues tested including normal prostate tissues. Prostatic acid phosphatase showed 9.14 fold over-expression in prostate tissues as compared to other normal tissues tested. It was over-expressed in 67% of prostate tumors, 50% of normal prostate, and not detected in other normal tissues tested. Transglutaminase showed 14.84 fold over-expression in prostate tissues as compared to other normal tissues tested. It was over-expressed in 30% of prostate tumors, 50% of normal prostate, and is not detected in other normal tissues tested. High density lipoprotein binding protein (HDLBP) showed 28.06 fold over-expression in prostate tissues as compared to other normal tissues tested. It was over-expressed in 97% of prostate tumors, 75% of normal prostate, and is undetectable in all other normal tissues tested. CGI-69 showed 3.56 fold over-expression in prostate tissues as compared to other normal tissues tested. It is a low abundant gene, detected in more than 90% of prostate tumors, and in 75% normal prostate tissues. The expression of this gene in normal tissues was very low. KIAA0122 showed 4.24 fold over-expression in prostate

tissues as compared to other normal tissues tested. It was over-expressed in 57% of prostate tumors, it was undetectable in all normal tissues tested including normal prostate tissues. 19142.2 bangur showed 23.25 fold over-expression in prostate tissues as compared to other normal tissues tested. It was over-expressed in 97% of prostate tumors and 100% of normal prostate. It was undetectable in other normal tissues tested. 5566.1 Wang showed 3.31 fold over-expression in prostate tissues as compared to other normal tissues tested. It was overexpressed in 97% of prostate tumors, 75% normal prostate and was also over-expressed in normal bone marrow, pancreas, and activated PBMC. Novel clone 23379 showed 4.86 fold over-expression in prostate tissues as compared to other normal tissues tested. It was detectable in 97% of prostate tumors and 75% normal prostate and is undetectable in all other normal tissues tested. Novel clone 23399 showed 4.09 fold over-expression in prostate tissues as compared to other normal tissues tested. It was over-expressed in 27% of prostate tumors and was undetectable in all normal tissues tested including normal prostate tissues. Novel clone 23320 showed 3.15 fold over-expression in prostate tissues as compared to other normal tissues tested. It was detectable in all prostate tumors and 50% of normal prostate tissues. It was also expressed in normal colon and trachea. Other normal tissues do not express this gene at high level.

EXAMPLE 14 IDENTIFICATION OF PROSTATE TUMOR ANTIGENS BY ELECTRONIC SUBTRACTION

This Example describes the use of an electronic subtraction technique to identify prostate tumor antigens.

Potential prostate-specific genes present in the GenBank human EST database were identified by electronic subtraction (similar to that described by Vasmatizis et al., *Proc. Natl. Acad. Sci. USA 95*:300-304, 1998). The sequences of EST clones (43,482) derived from various prostate libraries were obtained from the GenBank public human EST database. Each prostate EST sequence was used as a query sequence in a BLASTN (National Center for Biotechnology Information) search against the human EST database. All matches considered identical (length of matching sequence >100 base pairs, density of identical matches over this region > 70%) were grouped (aligned) together in a cluster. Clusters containing more than 200 ESTs were discarded since they probably represented repetitive elements or highly expressed genes such as those for ribosomal proteins. If two or more clusters shared common ESTs, those clusters were grouped together into a "supercluster," resulting in 4,345 prostate superclusters.

Records for the 479 human cDNA libraries represented in the GenBank release were downloaded to create a database of these cDNA library records. These 479 cDNA libraries were grouped into three groups, Plus (normal prostate and prostate tumor libraries, and breast cell lines, in which expression was desired), Minus (libraries from other normal adult tissues, in which expression was not desirable), and Other (fetal tissue, infant tissue, tissues found only in women, non-prostate tumors and cell lines other than prostate cell lines, in which expression was considered to be irrelevant). A summary of these library groups is presented in Table II.

<u>Table II</u>

<u>Prostate cDNA Libraries and ESTs</u>

Library	# of Libraries	# of ESTs
Plus	25	43,482
Normal	11	18,875
Tumor	11	21,769
Cell lines	3	2,838
Minus	166	
Other	287	

Each supercluster was analyzed in terms of the ESTs within the supercluster. The tissue source of each EST clone was noted and used to classify the superclusters into four groups: Type 1- EST clones found in the Plus group libraries only; no expression detected in Minus or Other group libraries; Type 2- EST clones found in the Plus and Other group libraries only; no expression detected in the Minus group; Type 3- EST clones found in the Plus, Minus and Other group libraries, but the expression in the Plus group is higher than in either the Minus or Other groups; and Type 4- EST clones found in Plus, Minus and Other group libraries, but the expression in the Plus group is higher than the expression in the Minus group. This analysis identified 4,345 breast clusters (see Table III). From these clusters, 3,172 EST clones were ordered from Research Genetics, Inc., and were received as frozen glycerol stocks in 96-well plates.

<u>Table III</u> <u>Prostate Cluster Summary</u>

	# of	# of ESTs
Туре	Superclusters	Ordered
1	688	677
2	2899	2484
3	. 85	11
4	673	0
Total	4345	3172

The inserts were PCR-amplified using amino-linked PCR primers for Synteni microarray analysis. When more than one PCR product was obtained for a particular clone, that PCR product was not used for expression analysis. In total, 2,528 clones from the electronic subtraction method were analyzed by microarray analysis to identify electronic subtraction breast clones that had high tumor vs. normal tissue mRNA. Such screens were performed using a Synteni (Palo Alto, CA) microarray, according to the manufacturer's instructions (and essentially as described by Schena et al., *Proc. Natl. Acad. Sci. USA 93*:10614-10619, 1996 and Heller et al., *Proc. Natl. Acad. Sci. USA 94*:2150-2155, 1997). Within these analyses, the clones were arrayed on the chip, which was then probed with fluorescent probes generated from normal and tumor prostate cDNA, as well as various other normal tissues. The slides were scanned and the fluorescence intensity was measured.

Clones with an expression ratio greater than 3 (i.e., the level in prostate tumor cDNA was at least three times the level in normal prostate cDNA) were identified as prostate tumor-specific sequences (Table IV). The sequences of these clones are provided in SEQ ID NOs:401-453, with certain novel sequences shown in SEQ ID NOs:407, 413, 416-419, 422, 426, 427 and 450.

<u>Table IV</u> <u>Prostate-tumor Specific Clones</u>

SEQ ID NO.	Sequence Designation	Comments
401		previously identified P1000C
402	22547	previously identified P704P

403	22548	known
404	22550	known
405	22551	PSA
406	22552	
407	22553	prostate secretory protein 94
408	22558	novel
409	22562	previously identified P509S
410	22565	glandular kallikrein
411	22567	previously identified P1000C
412	22568	PAP
413	22570	B1006C (breast tumor antigen)
414	22571	novel
415		PSA
416	22572	previously identified P706P
417	22573	novel
418	22574	novel
419	22575	novel
	22580	novel
420 421	22581	PAP
	22582	prostatic secretory protein 94
422	22583	novel
423	22584	prostatic secretory protein 94
424	22585	prostatic secretory protein 94
425	22586	known
426	22587	novel
427	22588	novel
428	22589	PAP
429	22590	known
430	22591	PSA
431	22592	known
432	22593	Previously identified P777P
433	22594	T cell receptor gamma chain
434	22595	Previously identified P705P
435	22596	Previously identified P707P
436	22847	PAP
437	22848	known
438	22849	prostatic secretory protein 57

439	22851	PAP
440	22852	PAP
441	22853	PAP
442	22854	previously identified P509S
443	22855	previously identified P705P
444	22856	previously identified P774P
445	22857	PSA
446	23601	previously identified P777P
447	23602	PSA
448	23605	PSA
449	23606	PSA
450	23612	novel
451	23614	PSA
452	23618	previously identified P1000C
453	23622	previously identified P705P

EXAMPLE 15 FURTHER IDENTIFICATION OF PROSTATE TUMOR ANTIGENS BY MICROARRAY ANALYSIS

This Example describes the isolation of additional prostate tumor polypeptides from a prostate tumor cDNA library.

A human prostate tumor cDNA expression library as described above was screened using microarray analysis to identify clones that display at least a three fold over-expression in prostate tumor and/or normal prostate tissue, as compared to non-prostate normal tissues (not including testis). 142 clones were identified and sequenced. Certain of these clones are shown in SEQ ID NOs:454-467. Of these sequences SEQ ID NOs:459-461 correspond to novel genes. The others (SEQ ID NOs:454-458 and 461-467) correspond to known sequences.

EXAMPLE 16 FURTHER CHARACTERIZATION OF PROSTATE TUMOR ANTIGEN P710P

This Example describes the full length cloning of P710P.

The prostate cDNA library described above was screened with the P710P fragment described above. One million colonies were plated on LB/Ampicillin plates. Nylon membrane filters were used to lift these colonies, and the cDNAs picked up by these filters were then denatured and cross-linked to the filters by UV light. The P710P fragment was radiolabeled and used to hybridize with the filters. Positive cDNA clones were selected and their cDNAs recovered and sequenced by an automatic ABI Sequencer. Four sequences were obtained, and are presented in SEQ ID NOs:468-471.

From the foregoing, it will be appreciated that, although specific embodiments of the invention have been described herein for the purposes of illustration, various modifications may be made without deviating from the spirit and scope of the invention. Accordingly, the present invention is not limited except as by the appended claims.

CLAIMS

- 1. An isolated polypeptide comprising at least an immunogenic portion of a prostate tumor protein, or a variant thereof, wherein the tumor protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:
- (a) sequences recited in any one of SEQ ID NOs:2, 3, 8-29, 41-45, 47-52, 54-65, 70, 73-74, 79, 81, 87, 90, 92, 93, 97, 103, 104, 107, 109-111, 115-160, 171, 173-175, 177, 181, 188, 191, 193, 194, 198, 203, 204, 207, 209, 220, 222-225, 227-305, 307-315, 326, 328, 330, 332, 334, 350-365, 381, 382, 384, 386, 389, 390, 392, 393, 396, 401, 402, 407, 408, 410, 413, 415-419, 422, 426, 427, 432, 434, 435, 442-444, 446, 450, 452, 453, 459-461, 468-471 or 472;
- (b) sequences that hybridize to any of the foregoing sequences under moderately stringent conditions; and
 - (c) complements of any of the sequence of (a) or (b).
- 2. An isolated polypeptide according to claim 1, wherein the polypeptide comprises an amino acid sequence that is encoded by a polynucleotide sequence recited in any one of SEQ ID NOs:2, 3, 8-29, 41-45, 47-52, 54-65, 70, 73-74, 79, 81, 87, 90, 92, 93, 97, 103, 104, 107, 109-111, 115-160, 171, 173-175, 177, 181, 188, 191, 193, 194, 198, 203, 204, 207, 209, 220, 222-225, 227-305, 307-315, 326, 328, 330, 332, 334, 350-365, 381, 382, 384, 386, 389, 390, 392, 393, 396, 401, 402, 407, 408, 410, 413, 415-419, 422, 426, 427, 432, 434, 435, 442-444, 446, 450, 452, 453, 459-461, 468-471 or 472, or a complement of any of the foregoing polynucleotide sequences.
- 3. An isolated polypeptide comprising a sequence recited in any one of SEQ ID NO: 108, 112, 113, 114, 172, 176, 178, 327, 329, 331, 339 and 383.
- 4. An isolated polynucleotide encoding at least 15 amino acid residues of a prostate tumor protein, or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with antigenspecific antisera is not substantially diminished, wherein the tumor protein comprises an amino acid sequence that is encoded by a polynucleotide comprising a sequence recited in any one of SEQ ID NOs:2, 3, 8-29, 41-45, 47-52, 54-65, 70, 73-74, 79, 81, 87, 90, 92, 93, 97, 103, 104, 107, 109-111, 115-160, 171, 173-175, 177, 181, 188, 191, 193, 194, 198, 203, 204, 207, 209, 220, 222-225, 227-305, 307-315, 326, 328, 330, 332, 334, 350-365, 381, 382, 384, 386, 389, 390, 392, 393, 396, 401, 402, 407, 408, 410, 413, 415-419, 422, 426, 427, 432, 434,

- 435, 442-444, 446, 450, 452, 453, 459-461, 468-471 or 472, or a complement of any of the foregoing sequences.
- 5. An isolated polynucleotide encoding a prostate tumor protein, or a variant thereof, wherein the tumor protein comprises an amino acid sequence that is encoded by a polynucleotide comprising a sequence recited in any one of SEQ ID NOs:2, 3, 8-29, 41-45, 47-52, 54-65, 70, 73-74, 79, 81, 87, 90, 92, 93, 97, 103, 104, 107, 109-111, 115-160, 171, 173-175, 177, 181, 188, 191, 193, 194, 198, 203, 204, 207, 209, 220, 222-225, 227-305, 307-315, 326, 328, 330, 332, 334, 350-365, 381, 382, 384, 386, 389, 390, 392, 393, 396, 401, 402, 407, 408, 410, 413, 415-419, 422, 426, 427, 432, 434, 435, 442-444, 446, 450, 452, 453, 459-461, 468-471 or 472, or a complement of any of the foregoing sequences.
- 6. An isolated polynucleotide comprising a sequence recited in any one of SEQ ID NOs:2, 3, 8-29, 41-45, 47-52, 54-65, 70, 73-74, 79, 81, 87, 90, 92, 93, 97, 103, 104, 107, 109-111, 115-160, 171, 173-175, 177, 181, 188, 191, 193, 194, 198, 203, 204, 207, 209, 220, 222-225, 227-305, 307-315, 326, 328, 330, 332, 334, 350-365, 381, 382, 384, 386, 389, 390, 392, 393, 396, 401, 402, 407, 408, 410, 413, 415-419, 422, 426, 427, 432, 434, 435, 442-444, 446, 450, 452, 453, 459-461, 468-471 or 472.
- 7. An isolated polynucleotide comprising a sequence that hybridizes, under moderately stringent conditions, to a sequence recited in any one of SEQ ID NOs:2, 3, 8-29, 41-45, 47-52, 54-65, 70, 73-74, 79, 81, 87, 90, 92, 93, 97, 103, 104, 107, 109-111, 115-160, 171, 173-175, 177, 181, 188, 191, 193, 194, 198, 203, 204, 207, 209, 220, 222-225, 227-305, 307-315, 326, 328, 330, 332, 334, 350-365, 381, 382, 384, 386, 389, 390, 392, 393, 396, 401, 402, 407, 408, 410, 413, 415-419, 422, 426, 427, 432, 434, 435, 442-444, 446, 450, 452, 453, 459-461, 468-471 or 472.
- 8. An isolated polynucleotide complementary to a polynucleotide according to any one of claims 4-7.
- 9. An expression vector comprising a polynucleotide according to any one of claims 4-7.
- 10. A host cell transformed or transfected with an expression vector according to claim 9.
 - 11. An expression vector comprising a polynucleotide according claim 8.

- 12. A host cell transformed or transfected with an expression vector according to claim 11.
- 13. A pharmaceutical composition comprising a polypeptide according to claim 1, in combination with a physiologically acceptable carrier.
- 14. A vaccine comprising a polypeptide according to claim 1, in combination with a non-specific immune response enhancer.
- 15. A vaccine according to claim 14, wherein the non-specific immune response enhancer is an adjuvant.
- 16. A vaccine according to claim 14, wherein the non-specific immune response enhancer induces a predominantly Type I response.
- 17. A pharmaceutical composition comprising a polynucleotide according to claim 4, in combination with a physiologically acceptable carrier.
- 18. A vaccine comprising a polynucleotide according to claim 4, in combination with a non-specific immune response enhancer.
- 19. A vaccine according to claim 18, wherein the non-specific immune response enhancer is an adjuvant.
- 20. A vaccine according to claim 18, wherein the non-specific immune response enhancer induces a predominantly Type I response.
- 21. An isolated antibody, or antigen-binding fragment thereof, that specifically binds to a prostate tumor protein that comprises an amino acid sequence that is encoded by a polynucleotide sequence recited in any one of SEQ ID NOs:2, 3, 8-29, 41-45, 47-52, 54-65, 70, 73-74, 79, 81, 87, 90, 92, 93, 97, 103, 104, 107, 109-111, 115-160, 171, 173-175, 177, 181, 188, 191, 193, 194, 198, 203, 204, 207, 209, 220, 222-225, 227-305, 307-315, 326, 328, 330, 332, 334, 350-365, 381, 382, 384, 386, 389, 390, 392, 393, 396, 401, 402, 407, 408, 410, 413, 415-419, 422, 426, 427, 432, 434, 435, 442-444, 446, 450, 452, 453, 459-461, 468-471 or 472 or a complement of any of the foregoing polynucleotide sequences.

- 22. A pharmaceutical composition comprising an antibody or fragment thereof according to claim 18, in combination with a physiologically acceptable carrier.
- 23. A pharmaceutical composition comprising an antigen-presenting cell that expresses a polypeptide according to claim 1, in combination with a pharmaceutically acceptable carrier or excipient.
- 24. A pharmaceutical composition according to claim 23, wherein the antigen presenting cell is a dendritic cell or a macrophage.
- 25. A vaccine comprising an antigen-presenting cell that expresses a polypeptide according to claim 1, in combination with a non-specific immune response enhancer.
- 26. A vaccine according to claim 25, wherein the non-specific immune response enhancer is an adjuvant.
- 27. A vaccine according to claim 25, wherein the non-specific immune response enhancer induces a predominantly Type I response.
- 28. A vaccine according to claim 25, wherein the antigen-presenting cell is a dendritic cell.
- 29. A method for inhibiting the development of a cancer in a patient, comprising administering to a patient an effective amount of a polypeptide according to claim 1, and thereby inhibiting the development of a cancer in the patient.
- 30. A method for inhibiting the development of a cancer in a patient, comprising administering to a patient an effective amount of a polynucleotide according to claim 4, and thereby inhibiting the development of a cancer in the patient.
- 31. A method for inhibiting the development of a cancer in a patient, comprising administering to a patient an effective amount of an antibody or antigen-binding fragment thereof according to claim 21, and thereby inhibiting the development of a cancer in the patient.

- 32. A method for inhibiting the development of a cancer in a patient, comprising administering to a patient an effective amount of an antigen-presenting cell that expresses a polypeptide according to claim 1, and thereby inhibiting the development of a cancer in the patient.
- 33. A method according to claim 32, wherein the antigen-presenting cell is a dendritic cell.
- 34. A method according to any one of claims 29-32, wherein the cancer is prostate cancer.
- 35. A fusion protein comprising at least one polypeptide according to claim 1.
- 36. A fusion protein according to claim 35, wherein the fusion protein comprises an expression enhancer that increases expression of the fusion protein in a host cell transfected with a polynucleotide encoding the fusion protein.
- 37. A fusion protein according to claim 35, wherein the fusion protein comprises a T helper epitope that is not present within the polypeptide of claim 1.
- 38. A fusion protein according to claim 35, wherein the fusion protein comprises an affinity tag.
- 39. An isolated polynucleotide encoding a fusion protein according to claim 35.
- 40. A pharmaceutical composition comprising a fusion protein according to claim 32, in combination with a physiologically acceptable carrier.
- 41. A vaccine comprising a fusion protein according to claim 35, in combination with a non-specific immune response enhancer.
- 42. A vaccine according to claim 41, wherein the non-specific immune response enhancer is an adjuvant.

- 43. A vaccine according to claim 41, wherein the non-specific immune response enhancer induces a predominantly Type I response.
- 44. A pharmaceutical composition comprising a polynucleotide according to claim 40, in combination with a physiologically acceptable carrier.
- 45. A vaccine comprising a polynucleotide according to claim 40, in combination with a non-specific immune response enhancer.
- 46. A vaccine according to claim 45, wherein the non-specific immune response enhancer is an adjuvant.
- 47. A vaccine according to claim 45, wherein the non-specific immune response enhancer induces a predominantly Type I response.
- 48. A method for inhibiting the development of a cancer in a patient, comprising administering to a patient an effective amount of a pharmaceutical composition according to claim 40 or claim 44.
- 49. A method for inhibiting the development of a cancer in a patient, comprising administering to a patient an effective amount of a vaccine according to claim 41 or claim 45.
- 50. A method for removing tumor cells from a biological sample, comprising contacting a biological sample with T cells that specifically react with a prostate tumor protein, wherein the tumor protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:
- (i) polynucleotides recited in any one of SEQ ID NOs:1-111, 115-171, 173-175, 177, 179-305, 307-315, 326, 328, 330, 332-335, 340-375, 381, 382 or 384-472; and
 - (ii) complements of the foregoing polynucleotides;

wherein the step of contacting is performed under conditions and for a time sufficient to permit the removal of cells expressing the prostate tumor protein from the sample.

51. A method according to claim 50, wherein the biological sample is blood or a fraction thereof.

- 52. A method for inhibiting the development of a cancer in a patient, comprising administering to a patient a biological sample treated according to the method of claim 50.
- 53. A method for stimulating and/or expanding T cells specific for a prostate tumor protein, comprising contacting T cells with one or more of:
 - (i) a polypeptide according to claim 1;
- (ii) a polypeptide encoded by a polynucleotide comprising a sequence provided in any one of SEQ ID NOs:1-111, 115-171, 173-175, 177, 179-305, 307-315, 326, 328, 330, 332-335, 340-375, 381, 382 or 384-472;
 - (iii) a polynucleotide encoding a polypeptide of (i) or (ii); and/or
- (iv) an antigen presenting cell that expresses a polypeptide of (i) or (ii); under conditions and for a time sufficient to permit the stimulation and/or expansion of T cells.
- 54. An isolated T cell population, comprising T cells prepared according to the method of claim 53.
- 55. A method for inhibiting the development of a cancer in a patient, comprising administering to a patient an effective amount of a T cell population according to claim 54.
- 56. A method for inhibiting the development of a cancer in a patient, comprising the steps of:
- (a) incubating CD4⁺ and/or CD8+ T cells isolated from a patient with at least one component selected from the group consisting of:
 - (i) a polypeptide according to claim 1;
- (ii) a polypeptide encoded by a polynucleotide comprising a sequence of any one of SEQ ID NOs:1-111, 115-171, 173-175, 177, 179-305, 307-315, 326, 328, 330, 332-335, 340-375, 381, 382 or 384-472;
 - (iii) a polynucleotide encoding a polypeptide of (i) or (ii); or
- (iv) an antigen-presenting cell that expresses a polypeptide of (i) or (ii);

such that T cells proliferate; and

(b) administering to the patient an effective amount of the proliferated T cells, and thereby inhibiting the development of a cancer in the patient.

- 57. A method for inhibiting the development of a cancer in a patient, comprising the steps of:
- (a) incubating CD4⁺ and/or CD8+ T cells isolated from a patient with at least one component selected from the group consisting of:
 - (i) a polypeptide according to claim 1;
- (ii) a polypeptide encoded by a polynucleotide comprising a sequence of any one of SEQ ID NOs: 1-111, 115-171, 173-175, 177, 179-305, 307-315, 326, 328, 330, 332-335, 340-375, 381, 382 or 384-472;
 - (iii) a polynucleotide encoding a polypeptide of (i) or (ii); or
- (iv) an antigen-presenting cell that expresses a polypeptide of (i) or (ii);

such that T cells proliferate;

- (b) cloning at least one proliferated cell; and
- (c) administering to the patient an effective amount of the cloned T cells, and thereby inhibiting the development of a cancer in the patient.
- 58. A method for determining the presence or absence of a cancer in a patient, comprising the steps of:
- (a) contacting a biological sample obtained from a patient with a binding agent that binds to a prostate tumor protein, wherein the tumor protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:
- (i) polynucleotides recited in any one of SEQ ID NOs:1-111, 115-171, 173-175, 177, 179-305, 307-315, 326, 328, 330, 332-335, 340-375, 381, 382 or 384-472; and
 - (ii) complements of the foregoing polynucleotides;
- (b) detecting in the sample an amount of polypeptide that binds to the binding agent; and
- (c) comparing the amount of polypeptide to a predetermined cut-off value, and therefrom determining the presence or absence of a cancer in the patient.
- 59. A method according to claim 58, wherein the binding agent is an antibody.
- 60. A method according to claim 59, wherein the antibody is a monoclonal antibody.

- 61. A method according to claim 58, wherein the cancer is prostate cancer.
- 62. A method for monitoring the progression of a cancer in a patient, comprising the steps of:
- (a) contacting a biological sample obtained from a patient at a first point in time with a binding agent that binds to a prostate tumor protein, wherein the tumor protein comprises an amino acid sequence that is encoded by a polynucleotide sequence recited in any one of SEQ ID NOs:1-111, 115-171, 173-175, 177, 179-305, 307-315, 326, 328, 330, 332-335, 340-375, 381, 382 or 384-472, or a complement of any of the foregoing polynucleotides;
- (b) detecting in the sample an amount of polypeptide that binds to the binding agent;
- (c) repeating steps (a) and (b) using a biological sample obtained from the patient at a subsequent point in time; and
- (d) comparing the amount of polypeptide detected in step (c) to the amount detected in step (b) and therefrom monitoring the progression of the cancer in the patient.
- 63. A method according to claim 62, wherein the binding agent is an antibody.
- 64. A method according to claim 63, wherein the antibody is a monoclonal antibody.
- 65. A method according to claim 62, wherein the cancer is a prostate cancer.
- 66. A method for determining the presence or absence of a cancer in a patient, comprising the steps of:
- (a) contacting a biological sample obtained from a patient with an oligonucleotide that hybridizes to a polynucleotide that encodes a prostate tumor protein, wherein the tumor protein comprises an amino acid sequence that is encoded by a polynucleotide sequence recited in any one of SEQ ID NOs:1-111, 115-171, 173-175, 177, 179-305, 307-315, 326, 328, 330, 332-335, 340-375, 381, 382 or 384-472, or a complement of any of the foregoing polynucleotides;
- (b) detecting in the sample an amount of a polynucleotide that hybridizes to the oligonucleotide; and

- (c) comparing the amount of polynucleotide that hybridizes to the oligonucleotide to a predetermined cut-off value, and therefrom determining the presence or absence of a cancer in the patient.
- 67. A method according to claim 66, wherein the amount of polynucleotide that hybridizes to the oligonucleotide is determined using a polymerase chain reaction.
- 68. A method according to claim 66, wherein the amount of polynucleotide that hybridizes to the oligonucleotide is determined using a hybridization assay.
- 69. A method for monitoring the progression of a cancer in a patient, comprising the steps of:
- (a) contacting a biological sample obtained from a patient with an oligonucleotide that hybridizes to a polynucleotide that encodes a prostate tumor protein, wherein the tumor protein comprises an amino acid sequence that is encoded by a polynucleotide sequence recited in any one of SEQ ID NOs:1-111, 115-171, 173-175, 177, 179-305, 307-315, 326, 328, 330, 332-335, 340-375, 381, 382 or 384-472, or a complement of any of the foregoing polynucleotides;
- (b) detecting in the sample an amount of a polynucleotide that hybridizes to the oligonucleotide;
- (c) repeating steps (a) and (b) using a biological sample obtained from the patient at a subsequent point in time; and
- (d) comparing the amount of polynucleotide detected in step (c) to the amount detected in step (b) and therefrom monitoring the progression of the cancer in the patient.
- 70. A method according to claim 69, wherein the amount of polynucleotide that hybridizes to the oligonucleotide is determined using a polymerase chain reaction.
- 71. A method according to claim 69, wherein the amount of polynucleotide that hybridizes to the oligonucleotide is determined using a hybridization assay.
 - 72. A diagnostic kit, comprising:
 - (a) one or more antibodies according to claim 21; and
 - (b) a detection reagent comprising a reporter group.

- 73. A kit according to claim 72, wherein the antibodies are immobilized on a solid support.
- 74. A kit according to claim 73, wherein the solid support comprises nitrocellulose, latex or a plastic material.
- 75. A kit according to claim 72, wherein the detection reagent comprises an anti-immunoglobulin, protein G, protein A or lectin.
- 76. A kit according to claim 72, wherein the reporter group is selected from the group consisting of radioisotopes, fluorescent groups, luminescent groups, enzymes, biotin and dye particles.
- 77. An oligonucleotide comprising 10 to 40 nucleotides that hybridize under moderately stringent conditions to a polynucleotide that encodes a prostate tumor protein, wherein the tumor protein comprises an amino acid sequence that is encoded by a polynucleotide sequence recited in any one of SEQ ID NOs:2, 3, 8-29, 41-45, 47-52, 54-65, 70, 73-74, 79, 81, 87, 90, 92, 93, 97, 103, 104, 107, 109-111, 115-160, 171, 173-175, 177, 181, 188, 191, 193, 194, 198, 203, 204, 207, 209, 220, 222-225, 227-305, 307-315, 326, 328, 330, 332, 334, 350-365, 381, 382, 384, 386, 389, 390, 392, 393, 396, 401, 402, 407, 408, 410, 413, 415-419, 422, 426, 427, 432, 434, 435, 442-444, 446, 450, 452, 453, 459-461, 468-471 or 472, or a complement of any of the foregoing polynucleotides.
- 78. A oligonucleotide according to claim 77, wherein the oligonucleotide comprises 10-40 nucleotides recited in any one of SEQ ID NOs:2, 3, 8-29, 41-45, 47-52, 54-65, 70, 73-74, 79, 81, 87, 90, 92, 93, 97, 103, 104, 107, 109-111, 115-160, 171, 173-175, 177, 181, 188, 191, 193, 194, 198, 203, 204, 207, 209, 220, 222-225, 227-305, 307-315, 326, 328, 330, 332, 334, 350-365, 381, 382, 384, 386, 389, 390, 392, 393, 396, 401, 402, 407, 408, 410, 413, 415-419, 422, 426, 427, 432, 434, 435, 442-444, 446, 450, 452, 453, 459-461, 468-471 or 472.
 - 79. A diagnostic kit, comprising:
 - (a) an oligonucleotide according to claim 77; and
- (b) a diagnostic reagent for use in a polymerase chain reaction or hybridization assay.

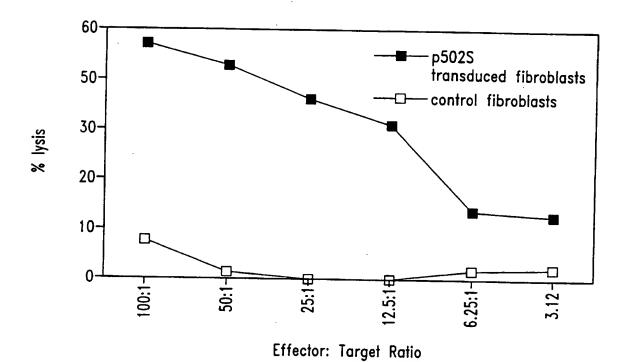


Fig. 1

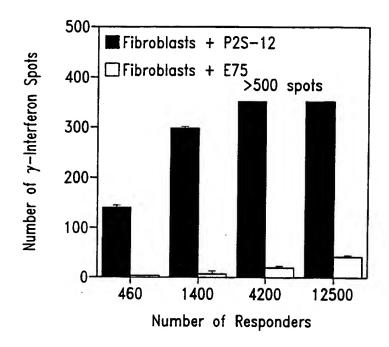


Fig. 2A

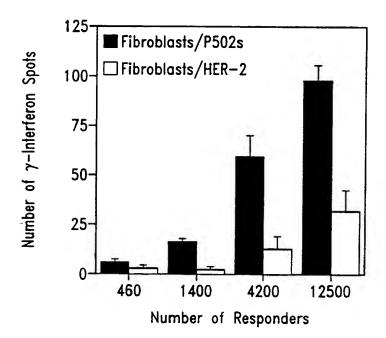
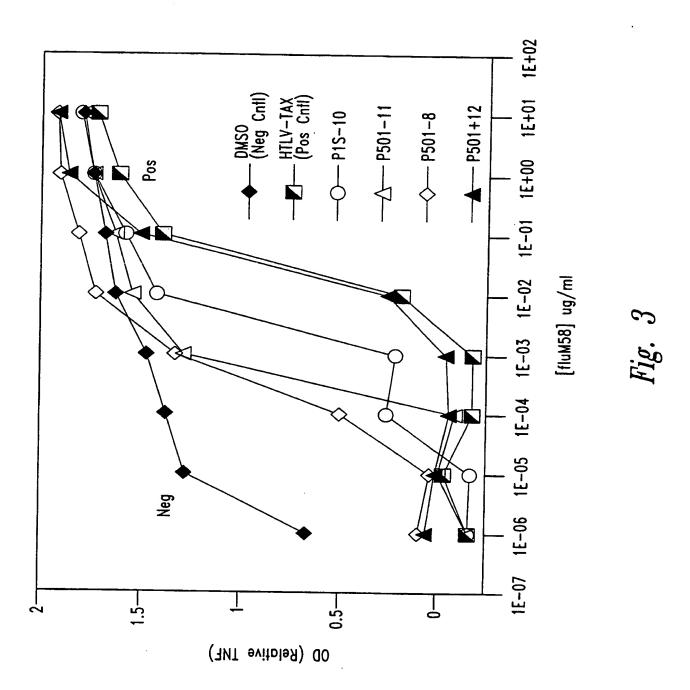


Fig. 2B

SUBSTITUTE SHEET (RULE 26)



SUBSTITUTE SHEET (RULE 26)

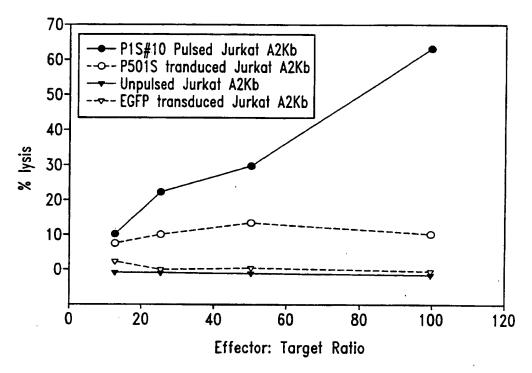
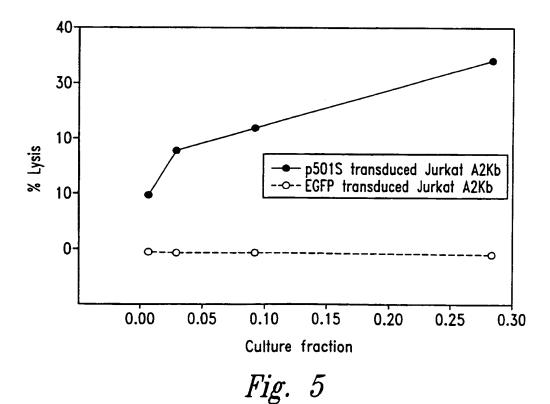
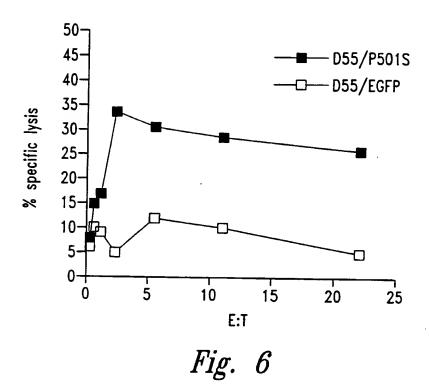
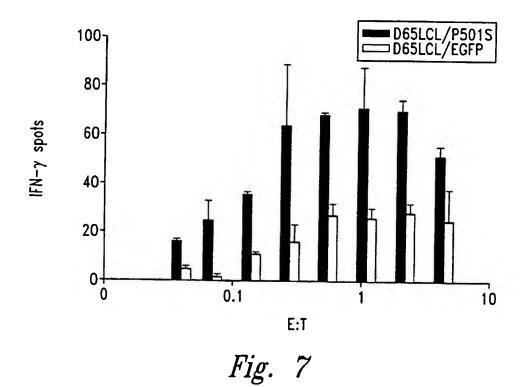


Fig. 4



SUBSTITUTE SHEET (RULE 26)





SUBSTITUTE SHEET (RULE 26)

SEQUENCE LISTING

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      <223> n = A,T,C or G
      <400> 2
acagaaatgt tggatggtgg agcacctttc tatacgactt acaggacagc agatggggaa
                                                                       60
ttcatqqctq ttggagcaat agaaccccag ttctacgagc tgctgatcaa aggact+gga
                                                                      120
```

```
ctaaagtctg atgaacttcc caatcagatg agcatggatg attggccaga aatgaagaag
                                                                        180
aagtttgcag atgtatttgc aaagaagacg aaggcagagt ggtgtcaaat ctttgacggc
                                                                        240
acagatgcct gtgtgactcc ggttctgact tttgaggagg ttgttcatca tgatcacaac
                                                                        300
aaggaacggg gctcgtttat caccagtgag gagcaggacg tgagcccccg ccctgcacct
                                                                        360
ctgctgttaa acaccccagc catcccttct ttcaaaaggg atccactagt tctagaagcg
                                                                        420
gccgccaccg cggtggagct ccagcttttg ttccctttag tgagggttaa ttgcgcgctt
                                                                        480
ggcgtaatca tggtcatagc tgtttcctgt gtgaaattgt tatccgctca caattccccc
                                                                        540
aacatacgag ccggaacata aagtgttaag cctggggtgc ctaatgantg agctaactcn
                                                                        600
cattaattgc gttgcgctca ctgcccgctt tccagtcggg aaaactgtcg tgccactgcn
                                                                        660
ttantgaatc ngccaccccc cgggaaaagg cggttgcntt ttgggcctct tccgctttcc
                                                                        720
tegeteattg atcetngene eeggtetteg getgeggnga aeggtteaet eetcaaagge
                                                                        780
ggtntnccgg ttatccccaa acnggggata cccnga
                                                                        816
      <210> 3
      <211> 773
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(773)
      <223> n = A,T,C or G
      <400> 3
cttttgaaag aagggatggc tggggtgttt aacagcagag gtgcagggcg ggggctcacg
                                                                        60
tcctgctcct cactggtgat aaacgagccc cgttccttgt tgtgatcatg atgaacaacc
                                                                       120
tcctcaaaag tcagaaccgg agtcacacag gcatctgtgc cgtcaaagat ttgacaccac
                                                                       180
tctgccttcg tcttctttgc aaatacatct gcaaacttct tcttcatttc tggccaatca
                                                                       240
tccatgctca tctgattggg aagttcatca gactttagtc canntccttt gatcagcagc
                                                                       300
tcgtagaact ggggttctat tgctccaaca gccatgaatt ccccatctgc tgtcctgtaa
                                                                       360
gtcgtataga aaggtgctcc accatccaac atgttctgtc ctcgaggggg ggcccggtac
                                                                       420
ccaattcgcc ctatantgag tcgtattacg cgcgctcact ggccgtcgtt ttacaacgtc
                                                                       480
gtgactggga aaaccctggg cgttaccaac ttaatcgcct tgcagcacat ccccctttcg
                                                                       540
ccagctgggc gtaatancga aaaggcccgc accgatcgcc cttccaacag ttgcgcacct
                                                                       600
gaatgggnaa atgggacccc cctgttaccg cgcattnaac ccccgcnggg tttngttgtt
                                                                       660
acceccaent nnacegetta caetttgeca gegeettane gecegeteee ttteneettt
                                                                       720
cttcccttcc tttcncnccn ctttcccccg gggtttcccc cntcaaaccc cna
                                                                       773
      <210> 4
      <211> 828
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(828)
      <223> n = A, T, C or G
      <400> 4
cctcctgagt cctactgacc tgtgctttct ggtgtggagt ccagggctgc taggaaaagg
                                                                       60
aatgggcaga cacaggtgta tgccaatgtt tctgaaatgg gtataatttc gtcctctct
                                                                       120
teggaacact ggetgtetet gaagaettet egeteagttt eagtgaggae acacacaaag
                                                                      180
acgtgggtga ccatgttgtt tgtggggtgc agagatggga ggggtggggc ccaccctgga
                                                                      240
agagtggaca gtgacacaag gtggacactc tctacagatc actgaggata agctggagcc
                                                                      300
acaatgcatg aggcacacac acagcaagga tgacnctgta aacatagccc acgctgtcct
                                                                      360
```

```
gngggcactg ggaagcctan atnaggccgt gagcanaaag aaggggagga tccactagtt
                                                                        420
ctanagoggc cgccaccgcg gtgganctcc ancttttgtt ccctttagtg agggttaatt
                                                                        480
gegegettgg entaateatg gteataneth ttteetgtgt gaaattgtta teegeteaca
                                                                        540
attccacaca acatacganc eggaaacata aantgtaaac etggggtgee taatgantga
                                                                        600
ctaactcaca ttaattgcgt tgcgctcact gcccgctttc caatcnggaa acctgtcttg
                                                                        660
concettgeat that gaaten gecaaceee ggggaaaage gettgegetet tgggegetet
                                                                        720
teegetteet eneteantta nteeetnene teggteatte eggetgenge aaaceggtte
                                                                        780
accncctcca aagggggtat tccggtttcc ccnaatccgg gganancc
                                                                        828
      <210> 5
      <211> 834
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(834)
      \langle 223 \rangle n = A,T,C or G
      <400> 5
ttttttttt tttttactga tagatggaat ttattaagct tttcacatgt gatagcacat
                                                                        60
agttttaatt gcatccaaag tactaacaaa aactctagca atcaagaatg gcagcatgtt
                                                                       120
attttataac aatcaacacc tgtggctttt aaaatttggt tttcataaga taatttatac
                                                                       180
tgaagtaaat ctagccatgc ttttaaaaaa tgctttaggt cactccaagc ttggcagtta
                                                                       240
acatttggca taaacaataa taaaacaatc acaatttaat aaataacaaa tacaacattg
                                                                       300
taggccataa tcatatacag tataaggaaa aggtggtagt gttgagtaag cagttattag
                                                                       360
aatagaatac cttggcctct atgcaaatat gtctagacac tttgattcac tcagccctga
                                                                       420
cattcagttt tcaaagtagg agacaggttc tacagtatca ttttacagtt tccaacacat
                                                                       480
tgaaaacaag tagaaaatga tgagttgatt tttattaatg cattacatcc tcaagagtta
                                                                       540
tcaccaaccc ctcagttata aaaaattttc aagttatatt agtcatataa cttggtgtgc
                                                                      - 600
ttattttaaa ttagtgctaa atggattaag tgaagacaac aatggtcccc taatgtgatt
                                                                       660
gatattggtc atttttacca gcttctaaat ctnaactttc aggcttttga actggaacat
                                                                       720
tgnatnacag tgttccanag ttncaaccta ctggaacatt acagtgtgct tgattcaaaa
                                                                       780
tgttattttg ttaaaaatta aattttaacc tggtggaaaa ataatttgaa atna
                                                                       834
      <210> 6
      <211> 818
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(818)
      <223> n = A,T,C or G
      <400> 6
ttttttttt tttttttt aagaccctca tcaatagatg gagacataca gaaatagtca
                                                                        60
aaccacatct acaaaatgcc agtatcaggc ggcggcttcg aagccaaagt gatgtttgga
                                                                       120
tgtaaagtga aatattagtt ggcggatgaa gcagatagtg aggaaagttg agccaataat
                                                                       180
gacgtgaagt ccgtggaagc ctgtggctac aaaaaatgtt gagccgtaga tgccgtcgga
                                                                       240
aatggtgaag ggagactcga agtactctga ggcttgtagg agggtaaaat agagacccag
                                                                       300
taaaattgta ataagcagtg cttgaattat ttggtttcgg ttgttttcta ttagactatg
                                                                       360
gtgagctcag gtgattgata ctcctgatgc gagtaatacg gatgtgttta ggagtggac
                                                                       420
ttctagggga tttagcgggg tgatgcctgt tgggggccag tgccctccta gttgggqqqt
                                                                       480
aggggctagg ctggagtggt aaaaggctca gaaaaatcct gcgaagaaaa aaacttctga
                                                                       540
```

```
ggtaataaat aggattatcc cgtatcgaag gcctttttgg acaggtggtg tgtggtgcc
                                                                        600
ttggtatgtg ctttctcgtg ttacatcgcg ccatcattgg tatatggtta gtgtgttggg
                                                                        660
ttantanggc ctantatgaa gaacttttgg antggaatta aatcaatngc ttqqccqqaa
                                                                       720
gtcattanga nggctnaaaa ggccctgtta ngggtctggg ctnqqtttta cccnacccat
                                                                       780
ggaatnence ecceggaena ntgnatecet attettaa
                                                                       818
      <210> 7
      <211> 817
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(817)
      \langle 223 \rangle n = A,T,C or G
      <400> 7
ttttttttt tttttttt tggctctaga gggggtagag ggggtgctat agggtaaata
                                                                        60
cgggccctat ttcaaagatt tttaggggaa ttaattctag gacgatgggt atgaaactgt
                                                                       120
ggtttgctcc acagatttca gagcattgac cgtagtatac ccccggtcgt gtagcggtga
                                                                       180
aagtggtttg gtttagacgt ccgggaattg catctgtttt taagcctaat gtggggacag
                                                                       240
ctcatgagtg caagacgtct tgtgatgtaa ttattatacn aatgggggct tcaatcggga
                                                                       300
gtactactcg attgtcaacg tcaaggagtc gcaggtcgcc tggttctagg aataatgggg
                                                                       360
gaagtatgta ggaattgaag attaatccgc cgtagtcggt gttctcctag gttcaatacc
                                                                       420
attggtggcc aattgatttg atggtaaggg gagggatcgt tgaactcgtc tgttatgtaa
                                                                       480
aggatncctt ngggatggga aggcnatnaa ggactangga tnaatggcgg gcangatatt
                                                                       540
tcaaacngtc tctanttcct gaaacgtctg aaatgttaat aanaattaan tttngttatt
                                                                       600
gaatnttnng gaaaagggct tacaggacta gaaaccaaat angaaaanta atnntaangg
                                                                       660
cnttatcntn aaaggtnata accnctccta tnatcccacc caatngnatt ccccacncnn
                                                                       720
acnattggat neceeantte canaaangge enceeeegg tgnanneene ettttgttee
                                                                       780
cttnantgan ggttattcnc ccctngcntt atcancc
                                                                       817
      <210> 8
      <211> 799
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(799)
      <223> n = A,T,C or G
      <400> 8
catttccggg tttactttct aaggaaagcc gagcggaagc tgctaacgtg ggaatcggtg
                                                                        60
cataaggaga actttctgct ggcacgcgct agggacaagc gggagagcga ctccgagcgt
                                                                       120
ctgaagcgca cgtcccagaa ggtggacttg gcactgaaac agctgggaca catccgcgag
                                                                       180
tacgaacagc gcctgaaagt gctggagcgg gaggtccagc agtgtagccg cgtcctgggg
                                                                       240
tgggtggccg angcctganc cgctctgcct tgctgcccc angtgggccg ccacccctg
                                                                       300
acctgcctgg gtccaaacac tgagccctgc tggcggactt caagganaac ccccacangg
                                                                       360
ggattttgct cctanantaa ggctcatctg ggcctcggcc ccccacctg gttggccttg
                                                                       420
tetttgangt gageeceatg teeatetggg ceaetgteng gaceaecttt ngggagtgtt
                                                                       480
ctccttacaa ccacannatg cccggctcct cccggaaacc antcccancc tgngaaggat
                                                                       540
caagneetgn atceactnnt netanaaccg geenceneeg engtggaacc encettntgt
                                                                       600
teettttent tnagggttaa tnnegeettg geettneean ngteetnene ntttteennt
                                                                       660
gttnaaattg ttangeneee neennteeen ennennenan eeegaeeenn annttnnann
                                                                       720
```

```
ncctggggt nccnncngat tgacconncc nccctntant tgcnttnggg nncnntgccc
                                                                       780
ctttccctct nggganncg
                                                                       799
      <210> 9
      <211> 801
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(801)
      <223> n = A, T, C or G
      <400> 9
acgeettgat ceteccagge tgggaetggt tetgggagga geegggeatg etgtggtttg
                                                                        60
taangatgac actcccaaag gtggtcctga cagtggccca gatggacatg gggctcacct
                                                                       120
caaggacaag gccaccaggt gcgggggccg aagcccacat gatccttact ctatgagcaa
                                                                       180
aatcccctgt gggggcttct ccttgaagtc cgccancagg gctcagtctt tggacccang
                                                                       240
caggicatgg ggitgingnc caactggggg concaacgca aaanggcnca gggcotengn
                                                                       300
cacccatccc angacgeggc tacactnetg gacctecene tecaccaett teatgegetg
                                                                       360
ttentaceeg egnatntgte ceanetgttt engtgeenae tecanettet nggaegtgeg
                                                                       420
ctacatacge ceggantene netecegett tgtecetate caegtneean caacaaattt
                                                                       480
cncentantg cacenattee caentttnne agnttteene nnegngette ettntaaaag
                                                                       540
ggttganccc cggaaaatnc cccaaagggg gggggccngg tacccaactn cccctnata
                                                                       600
gctgaantcc ccatnaccnn gnctcnatgg ancenteent tttaannacn ttctnaactt
                                                                       660
gggaanance etegneentn ecceenttaa teeeneettg enangnnent ecceenntee
                                                                       720
necennntng gentntnann enaaaaagge cennnaneaa teteetnnen eeteantteg
                                                                       780
ccanccctcg aaatcggccn c
                                                                       801
      <210> 10
      <211> 789
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(789)
      <223> n = A,T,C or G
      <400> 10
cagtetaint ggccagtgtg geagettiee etgtggetge eggtgeeaca tgeetgteee
                                                                        60
acagtgtggc cgtggtgaca gcttcagccg ccctcaccgg gttcaccttc tcagccctgc
                                                                       120
agatectgee ctacacactg geeteectet accaceggga gaageaggtg tteetgeeea
                                                                       180
aataccgagg ggacactgga ggtgctagca gtgaggacag cctgatgacc agcttcctgc
                                                                       240
caggecetaa geetggaget eeetteeeta atggacaegt gggtgetgga ggeagtggee
                                                                       300
tgctcccacc tccacccgcg ctctgcgggg cctctgcctg tgatgtctcc gtacgtgtgg
                                                                       360
tggtgggtga gcccaccgan gccagggtgg ttccgggccg gggcatctgc ctggacctcg
                                                                       420
ccatcctgga tagtgcttcc tgctgtccca ngtggcccca tccctgttta tgggctccat
                                                                       480
tgtccagctc agccagtctg tcactgccta tatggtgtct gccgcaggcc tgggtctggt
                                                                       540
cccatttact ttgctacaca ggtantattt gacaagaacg anttggccaa atactcagcg
                                                                       600
ttaaaaaatt ccagcaacat tgggggtgga aggcctgcct cactgggtcc aactccccgc
                                                                       660
tcctgttaac cccatggggc tgccggcttg gccgccaatt tctgttgctg ccaaantnat
                                                                       720
                                                                       780
gtggctctct gctgccacct gttgctggct gaagtgcnta cngcncanct nggggggtng
ggngttccc
                                                                       789
```

```
<210> 11
       <211> 772
       <212> DNA
      <213> Homo sapien
       <220>
       <221> misc_feature
      <222> (1)...(772)
      \langle 223 \rangle n = A,T,C or G
      <400> 11
cccaccctac ccaaatatta gacaccaaca cagaaaagct agcaatggat tcccttctac
                                                                         60
tttgttaaat aaataagtta aatatttaaa tgcctgtgtc tctgtgatgg caacagaagg
                                                                        120
accaacaggc cacateetga taaaaggtaa gagggggtg gatcagcaaa aagacagtge
                                                                        180
tgtgggctga ggggacctgg ttcttgtgtg ttgcccctca ggactcttcc cctacaaata
                                                                        240
actttcatat gttcaaatcc catggaggag tgtttcatcc tagaaactcc catgcaagag
                                                                        300
ctacattaaa cgaagctgca ggttaagggg cttanagatg ggaaaccagg tgactgagtt
                                                                        360
tattcagctc ccaaaaaccc ttctctaggt gtgtctcaac taggaggcta gctgttaacc
                                                                        420
ctgagcctgg gtaatccacc tgcagagtcc ccgcattcca gtgcatggaa cccttctggc
                                                                        480
ctccctgtat aagtccagac tgaaaccccc ttggaaggnc tccagtcagg cagccctana
                                                                        540
aactggggaa aaaagaaaag gacgccccan cccccagctg tgcanctacg cacctcaaca
                                                                        600
gcacagggtg gcagcaaaaa aaccacttta ctttggcaca aacaaaaact ngggggggca
                                                                        660
accceggeac ecenangggg gttaacagga anengggnaa entggaacce aattnaggea
                                                                        720
ggcccnccac cccnaatntt gctgggaaat ttttcctccc ctaaattntt tc
                                                                        772
      <210> 12
      <211> 751
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(751)
      <223> n = A,T,C or G
      <400> 12
gccccaattc cagctgccac accacccacg gtgactgcat tagttcggat gtcatacaaa
                                                                        60
agctgattga agcaaccctc tactttttgg tcgtgagcct tttgcttggt gcaggtttca
                                                                       120
ttggctgtgt tggtgacgtt gtcattgcaa cagaatgggg gaaaggcact gttctctttg
                                                                       180
aagtanggtg agtcctcaaa atccgtatag ttggtgaagc cacagcactt gagccctttc
                                                                       240
atggtggtgt tccacacttg agtgaagtct tcctgggaac cataatcttt cttgatggca
                                                                       300
ggcactacca gcaacgtcag ggaagtgctc agccattgtg gtgtacacca aggcgaccac
                                                                       360
agcagctgcn acctcagcaa tgaagatgan gaggangatg aagaagaacg tcncgagggc
                                                                       420
acacttgctc tcagtcttan caccatanca gcccntgaaa accaananca aagaccacna
                                                                       480
cnccggctgc gatgaagaaa tnaccccncg ttgacaaact tgcatggcac tggganccac
                                                                       540
agtggcccna aaaatcttca aaaaggatgc cccatcnatt gaccccccaa atgcccactg
                                                                       600
ccaacagggg ctgccccacn cncnnaacga tganccnatt gnacaagatc tncntggtct
                                                                       660
tnatnaacht gaaccetgen tngtggetee tgtteaggne ennggeetga ettetnaann
                                                                       720
aangaacten gaagneecea enggananne g
                                                                       751
      <210> 13
      <211> 729
      <212> DNA
      <213> Homo sapien
```

```
<220>
      <221> misc_feature
      <222> (1)...(729)
      <223> n = A,T,C or G
      <400> 13
gagecaggeg tecetetgee tgeecaetea gtggcaacae eegggagetg ttttgteett
                                                                        60
tgtggancct cagcagtncc ctctttcaga actcantgcc aaganccctg aacaggagcc
                                                                        120
accatgcagt gcttcagctt cattaagacc atgatgatcc tcttcaattt gctcatcttt
                                                                        180
ctgtgtggtg cagccctgtt ggcagtgggc atctgggtgt caatcgatgg ggcatccttt
                                                                        240
ctgaagatct tcgggccact gtcgtccagt gccatgcagt ttgtcaacgt gggctacttc
                                                                        300
ctcatcgcag ccggcgttgt ggtcttagct ctaggtttcc tgggctgcta tggtgctaag
                                                                       360
actgagagca agtgtgccct cgtgacgttc ttcttcatcc tcctcctcat cttcattgct
                                                                       420
gaggttgcaa tgctgtggtc gccttggtgt acaccacaat ggctgagcac ttcctgacgt
                                                                       480
tgctggtaat gcctgccatc aanaaaagat tatgggttcc caggaanact tcactcaagt
                                                                       540
gttggaacac caccatgaaa gggctcaagt gctgtggctt cnnccaacta tacggatttt
                                                                       600
gaagantcac ctacttcaaa gaaaanagtg cctttccccc atttctgttg caattgacaa
                                                                       660
acgtccccaa cacagccaat tgaaaacctg cacccaaccc aaangggtcc ccaaccanaa
                                                                       720
attnaaggg
                                                                       729
      <210> 14
      <211> 816
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(816)
      <223> n = A,T,C or G
      <400> 14
tgctcttcct caaagttgtt cttgttgcca taacaaccac cataggtaaa gcgggcgcag
                                                                        60
tgttcgctga aggggttgta gtaccagcgc gggatgctct ccttgcagag tcctgtgtct
                                                                       120
ggcaggtcca cgcagtgccc tttgtcactg gggaaatgga tgcgctggag ctcgtcaaag
                                                                       180
ccactcgtgt atttttcaca ggcagcctcg tccgacgcgt cggggcagtt gggggtgtct
                                                                       240
tcacactcca ggaaactgtc natgcagcag ccattgctgc agcggaactg ggtgggctga
                                                                       300
cangtgccag agcacactgg atggcgcctt tccatgnnan gggccctgng ggaaagtccc
                                                                       360
tgancccan anctgcctct caaangcccc accttgcaca ccccgacagg ctagaatgga
                                                                       420
atcttcttcc cgaaaggtag ttnttcttgt tgcccaancc anccccntaa acaaactctt
                                                                       480
gcanatctgc teegnggggg tentantace anegtgggaa aagaaceeca ggengegaac
                                                                       540
caancttgtt tggatncgaa gcnataatct nctnttctgc ttggtggaca gcaccantna
                                                                       600
ctgtnnanct ttagnccntg gtcctcntgg gttgnncttg aacctaatcn ccnntcaact
                                                                       660
gggacaaggt aantngccnt cctttnaatt cccnancntn ccccctggtt tggggttttn
                                                                       720
cncnctccta ccccagaaan nccgtgttcc cccccaacta ggggccnaaa ccnnttnttc
                                                                       780
cacaaccctn ccccacccac gggttcngnt ggttng
                                                                       816
      <210> 15
      <211> 783
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(783)
      \langle 223 \rangle n = A,T,C or G
```

```
<400> 15
ccaaggcctg ggcaggcata nacttgaagg tacaacccca ggaacccctg gtgctgaagg
                                                                         60
atgtggaaaa cacagattgg cgcctactgc ggggtgacac ggatgtcagg gtagagagga
                                                                        120
aagacccaaa ccaggtggaa ctgtggggac tcaaggaang cacctacctg ttccagctga
                                                                        180
cagtgactag ctcagaccac ccagaggaca cggccaacgt cacagtcact gtgctgtcca
                                                                        240
ccaagcagac agaagactac tgcctcgcat ccaacaangt gggtcgctgc cggggctctt
                                                                        300
tcccacgctg gtactatgac cccacggagc agatctgcaa gagtttcgtt tatggaggct
                                                                        360
gcttgggcaa caagaacaac taccttcggg aagaagagtg cattctancc tgtcngggtg
                                                                        420
tgcaaggtgg gcctttgana ngcanctctg gggctcangc gactttcccc cagggccct
                                                                        480
ccatggaaag gcgccatcca ntgttctctg gcacctgtca gcccacccag ttccgctgca
                                                                        540
ncaatggctg ctgcatcnac antitcctng aattgtgaca acacccccca ntgcccccaa
                                                                        600
ccctcccaac aaagcttccc tgttnaaaaa tacnccantt ggcttttnac aaacncccgg
                                                                        660
enecteentt tteecenntn aacaaagge netngenttt gaactgeeen aaccenggaa
                                                                        720
tctnccnngg aaaaantncc ccccctggtt cctnnaancc cctccncnaa anctncccc
                                                                        780
CCC
                                                                        783
      <210> 16
      <211> 801
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(801)
      \langle 223 \rangle n = A,T,C or G
      <400> 16
gccccaattc cagctgccac accacccacg gtgactgcat tagttcggat gtcatacaaa
                                                                        60
agctgattga agcaaccctc tactttttgg tcgtgagcct tttgcttggt gcaggtttca
                                                                       120
ttggctgtgt tggtgacgtt gtcattgcaa cagaatgggg gaaaggcact gttctctttg
                                                                       180
aagtagggtg agtcctcaaa atccgtatag ttggtgaagc cacagcactt gagccctttc
                                                                       240
atggtggtgt tccacacttg agtgaagtct tcctgggaac cataatcttt cttgatggca
                                                                       300
ggcactacca gcaacgtcag gaagtgctca gccattgtgg tgtacaccaa ggcgaccaca
                                                                       360
gcagctgcaa cctcagcaat gaagatgagg aggaggatga agaagaacgt cncgagggca
                                                                       420
cacttgctct ccgtcttagc accatagcag cccangaaac caagagcaaa gaccacaacg
                                                                       480
congotgoga atgaaagaaa ntacccacgt tgacaaactg catggccact ggacgacagt
                                                                       540
tggcccgaan atcttcagaa aagggatgcc ccatcgattg aacacccana tgcccactgc
                                                                       600
cnacaggget geneenenen gaaagaatga gecattgaag aaggatente ntggtettaa
                                                                       660
tgaactgaaa ccntgcatgg tggcccctgt tcagggctct tggcagtgaa ttctganaaa
                                                                       720
aaggaacngc ntnagccccc ccaaangana aaacaccccc gggtgttgcc ctgaattggc
                                                                       780
ggccaaggan ccctgccccn g
                                                                       801
      <210> 17
      <211> 740
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(740)
      <223> n = A,T,C or G
      <400> 17
gtgagagcca ggcgtccctc tgcctgccca ctcagtggca acacccggga gctgttttgt
                                                                        60
```

```
cctttgtgga gcctcagcag ttccctcttt cagaactcac tgccaagagc cctgaacagg
                                                                       120
agccaccatg cagtgcttca gcttcattaa gaccatgatg atcctcttca atttgctcat
                                                                       180
ctttctgtgt ggtgcagccc tgttggcagt gggcatctgg gtgtcaatcg atggggcatc
                                                                       240
ctttctgaag atcttcgggc cactgtcgtc cagtgccatg cagtttgtca acgtgggcta
                                                                       300
cttcctcatc gcagccggcg ttgtggtctt tgctcttggt ttcctgggct gctatggtgc
                                                                       360
taagacggag agcaagtgtg ccctcgtgac gttcttcttc atcctcctcc tcatcttcat
                                                                       420
tgctgaagtt gcagctgctg tggtcgcctt ggtgtacacc acaatggctg aaccattcct
                                                                       480
gacgttgctg gtantgcctg ccatcaanaa agattatggg ttcccaggaa aaattcactc
                                                                       540
aantntggaa caccnccatg aaaagggctc caatttctgn tggcttcccc aactataccg
                                                                       600
gaattttgaa aganteneec tacttecaaa aaaaaanant tgeetttnee ecenttetgt
                                                                       660
tgcaatgaaa acntcccaan acngccaatn aaaacctgcc cnnncaaaaa ggntcncaaa
                                                                       720
caaaaaant nnaagggttn
                                                                       740
      <210> 18
      <211> 802
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(802)
      <223> n = A,T,C or G
      <400> 18
ecgetggttg egetggteea gngnageeae gaageaegte ageatacaea geeteaatea
                                                                        60
caaggtette cagetgeege acattaegea gggeaagage etecageaac actgeatatg
                                                                       120
ggatacactt tactttagca gccagggtga caactgagag gtgtcgaagc ttattcttct
                                                                       180
gagcetetgt tagtggagga agatteeggg etteagetaa gtagteageg tatgteecat
                                                                       240
aagcaaacac tgtgagcagc cggaaggtag aggcaaagtc actctcagcc agctctctaa
                                                                       300
cattgggcat gtccagcagt tctccaaaca cgtagacacc agnggcctcc agcacctgat
                                                                       360
ggatgagtgt ggccagcgct gcccccttgg ccgacttggc taggagcaga aattgctcct
                                                                       420
ggttctgccc tgtcaccttc acttccgcac tcatcactgc actgagtgtg ggggacttgg
                                                                       480
gctcaggatg tccagagacg tggttccgcc ccctcnctta atgacaccgn ccanncaacc
                                                                       540
gtcggctccc gccgantgng ttcgtcgtnc ctgggtcagg gtctgctggc cnctacttgc
                                                                       600
aancttcgtc nggcccatgg aattcaccnc accggaactn gtangatcca ctnnttctat
                                                                       660
aaccggncgc caccgcnnnt ggaactccac tcttnttncc tttacttgag ggttaaggtc
                                                                       720
accettnneg ttacettggt ceaaacentn centgtgteg anatngtnaa tenggneena
                                                                       780
tnccancene atangaagee ng
                                                                       802
      <210> 19
      <211> 731
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(731)
      <223> n = A,T,C or G
      <400> 19
cnaagettee aggtnaeggg eegenaanee tgaeeenagg tancanaang eagnengegg
                                                                       60
gageceaeeg teaegnggng gngtetttat nggaggggge ggagecaeat enetggaent
                                                                      120
cntgacccca actccccncc ncncantgca gtgatgagtg cagaactgaa ggtnacgtgg
                                                                      180
caggaaccaa gancaaannc tgctccnntc caagtcggcn nagggggcgg ggctggccac
                                                                      240
geneateent enagtgetgn aaageeeenn eetgtetaet tgtttggaga aengennnga
                                                                      300
```

```
catgeccagn gttanataac nggengagag tnantttgec tetecettee ggetgegean
                                                                        360
cgngtntgct tagnggacat aacctgacta cttaactgaa cccnngaatc tnccncccct
                                                                        420
ccactaagct cagaacaaaa aacttcgaca ccactcantt gtcacctgnc tgctcaagta
                                                                        480
aagtgtaccc catneccaat gtntgctnga ngctctgncc tgcnttangt tcggtcctgg
                                                                        540
gaagacctat caattnaagc tatgtttctg actgcctctt gctccctgna acaancnacc
                                                                        600
cnncnntcca aggggggnc ggccccaat cccccaacc ntnaattnan tttancccn
                                                                        660
ccccenggce eggeetttta enanentenn nnaengggna aaacennnge tttneccaae
                                                                        720
nnaatccncc t
                                                                        731
      <210> 20
      <211> 754
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(754)
      <223> n = A, T, C or G
      <400> 20
ttttttttt tttttttt taaaaacccc ctccattnaa tgnaaacttc cgaaattgtc
                                                                        60
caacccctc ntccaaatnn conttteegg gngggggtte caaacccaan ttanntttgg
                                                                       120
annttaaatt aaatnttnnt tggnggnnna anccnaatgt nangaaagtt naacccanta
                                                                       180
tnancttnaa tncctggaaa congtngntt ccaaaaatnt ttaaccctta antocctccg
                                                                       240
aaatngttna nggaaaaccc aanttctcnt aaggttgttt gaaggntnaa tnaaaanccc
                                                                       300
nnccaattgt ttttngccac gcctgaatta attggnttcc gntgttttcc nttaaaanaa
                                                                       360
ggnnancccc ggttantnaa tccccccnnc cccaattata ccganttttt ttngaattgg
                                                                       420
ganccenegg gaattaacgg ggnnnnteec tnttgggggg enggnneece eccenteggg
                                                                       480
ggttngggnc aggncnnaat tgtttaaggg tccgaaaaat ccctccnaga aaaaaanctc
                                                                       540
ccaggntgag nntngggttt ncccccccc canggcccct ctcgnanagt tggggtttgg
                                                                       600
ggggcctggg attttntttc ccctnttncc tccccccc ccnggganag aggttngngt
                                                                       660
tttgntcnnc ggccccnccn aaganctttn ccganttnan ttaaatccnt gcctnggcga
                                                                       720
agtccnttgn agggntaaan ggccccctnn cggg
                                                                       754
      <210> 21
      <211> 755
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(755)
      <223> n = A,T,C or G
      <400> 21
atcaneccat gacecenaac nngggacene teaneeggne nnnenacene eggeenatea
                                                                       60
nngtnagnne actnennttn nateaeneee encenaetae gecenenane enaegeneta
                                                                      120
nncanatnce actganngeg egangtngan ngagaaanet nataccanag neaccanaen
                                                                      180
ccagctgtcc nanaangcct nnnatacngg nnnatccaat ntgnancctc cnaagtattn
                                                                      240
nncnncanat gattttcctn anccgattac centnecece tanccectee eccecaacna
                                                                      300
cgaaggenet ggneenaagg nngegnenee eegetagnte eeenneaagt eneneneeta
                                                                      360
aactcancen nattaenege ttentgagta teacteeceg aateteacee tacteaacte
                                                                      420
aaaaanatcn gatacaaaat aatncaagcc tgnttatnac actntgactg ggtctctatt
                                                                      480
ttagnggtcc ntnaanchtc ctaatacttc cagtctncct tcnccaattt ccnaanggct
                                                                      540
ctttengaca geatnttttg gtteeenntt gggttettan ngaattgeee ttentngaae
                                                                      600
```

```
gggctcntct tttccttcgg ttancctggn ttcnnccggc cagttattat ttcccntttt
                                                                       660
aaattentne entttanttt tggenttena aaceeegge ettgaaaaeg geeeetggt
                                                                       720
aaaaggttgt tttganaaaa tttttgtttt gttcc
                                                                       755
      <210> 22
      <211> 849
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(849)
      <223> n = A.T.C or G
      <400> 22
tttttttttt tttttangtg tngtcgtgca ggtagaggct tactacaant gtgaanacgt
                                                                        60
acgctnggan taangcgacc cganttctag gannencect aaaatcanac tgtgaagatn
                                                                       120
atcctgnnna cggaanggtc accggnngat nntgctaggg tgnccnctcc cannnenttn
                                                                       180
cataacteng nggccctgcc caccaccttc ggcggcccng ngnccgggcc cgggtcattn
                                                                       240
gnnttaaccn cactnngcna neggttteen neecenneng accenggega teeggggtne
                                                                       300
tetgtettee cetgnagnen anaaantggg ceneggneee etttaceeet nnacaageea
                                                                       360
engeenteta neenengeee eccetecant nngggggaet geenannget eegttnetng
                                                                       420
nnacccennn gggtncctcg gttgtcgant cnaccgnang ccanggattc cnaaggaagg
                                                                       480
tgcgttnttg gcccctaccc ttcgctncgg nncacccttc ccgacnanga nccgctcccg
                                                                       540
enennegning ceteneeteg caacacege netentengt neggninece ecceacege
                                                                       600
necetenene ngnegnanen eteeneenee gteteannea eeaceeegee eegeeaggee
                                                                       660
ntcanccacn ggnngacnng nagcnennte geneegegen gegneneet egeenengaa
                                                                       720 -
ctncntcngg ccantnncgc tcaanconna cnaaacgccg ctgcgcggcc cgnaqcqncc
                                                                       780
ncctcenega gtectecegn ettecnacee anguntteen egaggacaen nnaceeegee
                                                                       840
nncangcgg
                                                                       849
      <210> 23
      <211> 872
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(872)
      <223> n = A,T,C or G
      <400> 23
gegeaaacta tacttegete gnactegtge geetegetne tetttteete egeaaceatg
                                                                       60
tetgaenane eegattngge ngatatenan aagntegane agteeaaact gantaacaca
                                                                      120
cacacnenan aganaaatee netgeettee anagtanaen attgaaenng agaaceange
                                                                      180
nggcgaatcg taatnaggcg tgcgccgcca atntgtcncc gtttattntn ccagcntcnc
                                                                      240
ctnccnaccc tacntcttcn nagctgtcnn acccctngtn cgnaccccc naggtcggga
                                                                      300
tegggtttnn nntgacegng ennecectee eccentecat nacganeene ecqeaceace
                                                                      360
nanngenege neceegnnet ettegeenee etgteetntn eccetgtnge etggenengn
                                                                      420
accgcattga ccctcgccnn ctncnngaaa ncgnanacgt ccgggttgnn annancgctq
                                                                      480
tgggnnngcg tetgeneege gtteetteen nennetteea ceatettent taengggtet
                                                                      540
concecent tennneache ceteggacge intectnige eccectinae teccececti
                                                                      600
cgncgtgncc cgnccccacc ntcatttnca nacgntcttc acaannncct ggntnnctcc
                                                                      660
chancing gtcancchag ggaagggngg ggnncchntg nttgacgttg nggngangtc
                                                                      720
cgaanantcc tencentean enctaceeet egggegnnet etengtinee aacttaneaa
                                                                      780
```

```
ntetecceeg ngngenente teagectene ceneceenet etetgeantg tnetetgete
                                                                        840
tnaccnntac gantnttcgn cnccctcttt cc
                                                                        872
      <210> 24
      <211> 815
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(815)
      <223> n = A, T, C or G
      <400> 24
gcatgcaagc ttgagtattc tatagngtca cctaaatanc ttggcntaat catggtcnta
                                                                        60
nctgncttcc tgtgtcaaat gtatacnaan tanatatgaa tctnatntga caaganngta
                                                                       120
tentneatta gtaacaantg tnntgteeat eetgtengan canatteeca tnnattnegn
                                                                       180
egeattenen geneantatn taatngggaa ntennntnnn neacenneat etatentnee
                                                                       240
genecetgae tggnagagat ggatnantte tnntntgace nacatgttea tettggattn
                                                                       300
aanancecee egengneeae eggtingnng enageennte ecaagacete etgiggaggi
                                                                       360
aacctgcgtc aganncatca aacntgggaa acccgcnncc angtnnaagt ngnnncanan
                                                                       420
gatecegtee aggnttnace atceettene agegeeect tingtgeett anagngnage
                                                                       480
gtgtccnanc cnctcaacat ganacgcgcc agnccanccg caattnggca caatgtcgnc
                                                                       540
gaacccccta gggggantna tncaaanccc caggattgtc cncncangaa atcccncanc
                                                                       600
cccnccctac ccnnctttgg gacngtgacc aantcccgga gtnccagtcc ggccngnctc
                                                                       660
ccccaccggt nnccntgggg gggtgaanct cngnntcanc cngncgaggn ntcgnaaqqa
                                                                       720
accggneetn ggnegaanng anenntenga agngeenent egtataacce eccetencea
                                                                       780
ncenacngnt agntccccc engggtnegg aangg
                                                                       815
      <210> 25
      <211> 775
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(775)
      <223> n = A,T,C or G
      <400> 25
ccgagatgtc tcgctccgtg gccttagctg tgctcgcgct actctctt tctggcctgg
                                                                       60
aggctatcca gcgtactcca aagattcagg tttactcacg tcatccagca gagaatggaa
                                                                      120
agtcaaattt cctgaattgc tatgtgtctg ggtttcatcc atccgacatt gaanttgact
                                                                      180
tactgaagaa tgganagaga attgaaaaag tggagcattc agacttgtct ttcagcaagg
                                                                      240
actggtcttt ctatctcntg tactacactg aattcacccc cactgaaaaa gatgagtatg
                                                                      300
cctgccgtgt gaaccatgtg actttgtcac agcccaagat agttaagtgg gatcgagaca
                                                                      360
tgtaagcagn cnncatggaa gtttgaagat gccgcatttg gattggatga attccaaatt
                                                                      420
ctgcttgctt gcnttttaat antgatatgc ntatacaccc taccctttat gnccccaaat
                                                                      480
tgtaggggtt acatnantgt tenentngga catgatette etttataant cencentteq
                                                                      540
aattgcccgt cncccngttn ngaatgtttc cnnaaccacg gttggctccc ccaggtcncc
                                                                      600
tettaeggaa gggeetggge enetttneaa ggttggggga accnaaaatt tenettntge
                                                                      660
concoencea ennicitigng nneneantit ggaaccette enatteceet tggcetenna
                                                                      720
nectinneta anaaaactin aaaneginge naaanniitn acticecee tiace
                                                                      775
```

<210> 26

```
<211> 820
       <212> DNA
       <213> Homo sapien
       <220>
       <221> misc_feature
       <222> (1)...(820)
       <223> n = A,T,C or G
       <400> 26
anattantac agtgtaatct tttcccagag gtgtgtanag ggaacggggc ctagaggcat
                                                                          60
cccanagata nettatanea acagtgettt gaccaagage tgetgggeae attteetgea
                                                                         120
gaaaaggtgg cggtccccat cactcctcct ctcccatagc catcccagag gggtgagtag
                                                                         180
ccatcangcc ttcggtggga gggagtcang gaaacaacan accacagagc anacagacca
                                                                         240
ntgatgacca tgggcgggag cgagcctctt ccctgnaccg gggtggcana nganagccta
                                                                         300
nctgaggggt cacactataa acgttaacga ccnagatnan cacctgcttc aagtqcaccc
                                                                         360
ttcctacctg acnaccagng accnnnaact gcngcctggg gacagenetg ggancageta
                                                                         420
acnnageact cacctgeece eccatggeeg thegenteec tggteetgne aagggaaget
                                                                        480
ccctgttgga attncgggga naccaaggga ncccctcct ccanctgtga aggaaaaann
                                                                        540
gatggaattt tncccttccg gccnntcccc tcttccttta cacgccccct nntactcntc
                                                                        600
tecetetnit nicetgnene actitinace cennnatite ectinatiga teggannein
                                                                        660
ganattccac thncgcctnc chtchatchg naanachaaa nacthtctna cccnggggat
                                                                        720
gggnncctcg ntcatcctct ctttttcnct accnccnntt ctttgcctct ccttnqatca
780tccaaccntc gntggccntn cccccccnnn tcctttnccc
       <210> 27
       <211> 818
       <212> DNA
       <213> Homo sapien
       <220>
       <221> misc_feature
       <222> (1)...(818)
       \langle 223 \rangle n = A,T,C or G
       <400> 27
 totgggtgat ggcctcttcc tcctcaggga cctctgactg ctctgggcca aagaatctct
                                                                         60
tgtttcttct ccgagcccca ggcagcggtg attcagccct gcccaacctg attctgatga
                                                                        120
ctgcggatgc tgtgacggac ccaaggggca aatagggtcc cagggtccag ggaggggcgc
                                                                        180
ctgctgagca cttccgcccc tcaccctgcc cagcccctgc catgagctct gggctgggtc
                                                                        240
tecgeeteea gggttetget ettecangea ngecancaag tggegetggg ceacaetgge
                                                                        300
 ttcttcctgc ccentecctg gctctgantc tctgtcttcc tgtcctgtgc angenecttg
                                                                        360
gateteagtt teectenete anngaactet gtttetgann tetteantta aetntgantt
                                                                        420
tatnaccnan tggnctgtnc tgtcnnactt taatgggccn gaccggctaa tccctccctc
                                                                        480
netecettee anttennnna acengettne ententetee centaneeeg eengggaane
                                                                        540
ctcctttgcc ctnaccangg gccnnnaccg cccntnnctn ggggggcnng gtnnctncnc
                                                                        600
 ctgntnnccc cnctcncnnt tncctcgtcc cnncnncgcn nngcannttc ncngtcccnn
                                                                        660
 tnnctcttcn ngtntcgnaa ngntcncntn tnnnnngncn ngntnntncn tccctctcnc
                                                                        720
 connitgoing thattannac acaganeece anancanana agganatana tetacacage
                                                                        780
 cccnnccccc ngnattaagg cctccnntct ccggccnc
                                                                        818
       <210> 28
       <211> 731
```

<212> DNA

```
<213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(731)
      <223> n = A, T, C or G
      <400> 28
aggaagggcg gagggatatt gtangggatt gagggatagg agnataangg gggaggtgtg
                                                                         60
tcccaacatg anggtgnngt tctcttttga angagggttg ngtttttann ccnggtgggt
                                                                        120
gattnaaccc cattgtatgg agnnaaaggn tttnagggat ttttcggctc ttatcagtat
                                                                        180
ntanattcct gtnaatcgga aaatnatntt tcnncnggaa aatnttgctc ccatccgnaa
                                                                        240
attneteccg ggtagtgcat nttngggggn engecangtt teccaggetg etanaategt
                                                                        300
actaaagntt naagtgggan tncaaatgaa aacctnncac agagnatccn tacccgactg
                                                                        360
tnnnttncct tcgccctntg actctgcnng agcccaatac ccnngngnat gtcncccngn
                                                                        420
nnngcgncnc tgaaannnnc tcgnggctnn gancatcang gggtttcgca tcaaaagcnn
                                                                        480
cgtttcncat naaggcactt tngcctcatc caaccnctng ccctcnncca tttngccgtc
                                                                        540
nggttenect acgetnntng encetnnnin ganattttne cegeetnggg naanceteet
                                                                        600
gnaatgggta gggncttntc ttttnaccnn gnggtntact aatcnnctnc acgcntnctt
                                                                        660
tctcnacccc cccccttttt caatcccanc ggcnaatggg gtctccccnn cgangggggg
                                                                        720
nnncccannc c
                                                                        731
      <210> 29
      <211> 822 .
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(822)
      <223> n = A,T,C \text{ or } G
      <400> 29
actagtccag tgtggtggaa ttccattgtg ttggggncnc ttctatgant antnttagat
                                                                        60
cgctcanacc tcacancctc ccnacnangc ctataangaa nannaataga nctgtncnnt
                                                                       120
aththrache teatannect ennnaceeae teeetettaa ecentaetgt geetatngen
                                                                       180
tnnctantct ntgccgcctn cnanccaccn gtgggccnac cncnngnatt ctcnatctcc
                                                                       240
tenecatnin geetananta ngineatace etatacetae necaatgeta nnnetaanen
                                                                       300
tecatnantt annntaacta ecaetgaent ngaetttene atnaneteet aatttgaate
                                                                       360
tactctgact cccacngcct annnattagc anchtccccc nachatntct caaccaaatc
                                                                       420
ntcaacaacc tatctanctg ttcnccaacc nttncctccg atccccnnac aaccccctc
                                                                       480
ccaaataccc nccacctgac ncctaacccn caccatcccg gcaagccnan ggncatttan
                                                                       540
ccactggaat cacnatngga naaaaaaac ccnaactctc tancncnnat ctccctaana
                                                                       600
aatnotootn naatttactn noantnooat caancocacn tgaaacnnaa cocctgtttt
                                                                       660
tanatecett etttegaaaa eenaeeettt annneeeaae etttngggee eeeeenetne
                                                                       720
ccnaatgaag gncncccaat cnangaaacg nccntgaaaa ancnaggcna anannntccq
                                                                       780
canatectat ceettantin ggggneeett neeengggee ee
                                                                       822
      <210> 30
      <211> 787
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
```

```
<222> (1)...(787)
      <223> n = A, T, C or G
      <400> 30
cggccgcctg ctctggcaca tgcctcctga atggcatcaa aagtgatgga ctgcccattg
                                                                         60
ctagagaaga ccttctctcc tactgtcatt atggagccct gcagactgag ggctcccctt
                                                                        120
gtctgcagga tttgatgtct gaagtcgtgg agtgtggctt ggagctcctc atctacatna
                                                                        180
gctggaagcc ctggagggcc tctctcgcca gcctccccct tctctccacg ctctccangg
                                                                        240
acaccagggg ctccaggcag cccattattc ccagnangac atggtgtttc tccacgcgga
                                                                        300
cccatggggc ctgnaaggcc agggtctcct ttgacaccat ctctcccgtc ctgcctggca
                                                                        360
ggccgtggga tccactantt ctanaacggn cgccaccncg gtgggagctc cagcttttgt
                                                                        420
tcccnttaat gaaggttaat tgcncgcttg gcgtaatcat nggtcanaac tntttcctgt
                                                                        480
gtgaaattgt ttntcccctc ncnattccnc ncnacatacn aacccggaan cataaagtgt
                                                                       540
taaagcctgg gggtngcctn nngaatnaac tnaactcaat taattgcgtt ggctcatggc
                                                                       600
cegettteen ttenggaaaa etgtenteee etgenttnnt gaateggeea eeeceenggg
                                                                       660
aaaagcggtt tgcnttttng ggggnteett cenetteece eetenetaan eeetnegeet
                                                                       720
cggtcgttnc nggtngcggg gaangggnat nnnctcccnc naagggggng agnnngntat
                                                                       780
ccccaaa
                                                                       787
      <210> 31
      <211> 799
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(799)
      <223> n = A,T,C or G
      <400> 31
tttttttttt tttttttggc gatgctactg tttaattgca ggaggtgggg gtgtgtgtac
                                                                        60
catgtaccag ggctattaga agcaagaagg aaggagggag ggcagagcgc cctgctgagc
                                                                       120
aacaaaggac teetgeagee ttetetgtet gtetettgge geaggeacat ggggaggeet
                                                                       180
cccgcagggt gggggccacc agtccagggg tgggagcact acanggggtg ggagtgggtg
                                                                       240
gtggctggtn cnaatggcct gncacanatc cctacgattc ttgacacctg gatttcacca
                                                                       300
ggggaccttc tgttctccca nggnaacttc ntnnatctcn aaagaacaca actgtttctt
                                                                       360
engeanttet ggetgtteat ggaaageaea ggtgteenat tinggetggg acttggtaca
                                                                       420
tatggttccg gcccacctct cccntcnaan aagtaattca ccccccccn ccntctnttg
                                                                       480
cctgggccct taantaccca caccggaact canttantta ttcatcttng gntgggcttg
                                                                       540
ntnatchech cetgaangeg ceaagttgaa aggeeacgee gthecenete cecatagnan
                                                                       600
nttttnncnt canctaatgc ccccccnggc aacnatccaa tcccccccn tgggggccc
                                                                       660
agcccangge eccegneteg ggnnneengn enegnantee ecaggntete ceantengne
                                                                       720
conningence ecegeacgea gaacanaagg ntngageene egeanninnin nggtinenae
                                                                       780
ctcgccccc ccnncgnng
                                                                      799
      <210> 32
      <211> 789
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(789)
      <223> n = A,T,C or G
```

```
<400> 32
60
ttttnccnag ggcaggttta ttgacaacct cncgggacac aancaggctg gggacaggac
                                                                     120
ggcaacaggc tccggcggcg gcggcggcgg ccctacctgc ggtaccaaat ntgcagcctc
                                                                     180
cgctcccgct tgatnttcct ctgcagctgc aggatgccnt aaaacagggc ctcggccntn
                                                                     240
ggtgggcacc ctgggatttn aatttccacg ggcacaatgc ggtcgcancc cctcaccacc
                                                                     300
nattaggaat agtggtntta cccnccnccg ttggcncact ccccntggaa accacttntc
                                                                     360
gcggctccgg catctggtct taaaccttgc aaacnctggg gccctctttt tggttantnt
                                                                     420
nccngccaca atcatnactc agactggcnc gggctggccc caaaaaancn ccccaaaacc
                                                                     480
ggnccatgtc ttnncggggt tgctgcnatn tncatcacct cccgggcnca ncaggncaac
                                                                     540
ccaaaagttc ttgnggcccn caaaaaanct ccggggggnc ccagtttcaa caaagtcatc
                                                                     600
ccccttggcc cccaaatcct cccccgntt nctgggtttg ggaacccacg cctctnnctt
                                                                     660
tggnnggcaa gntggntccc ccttcgggcc cccggtgggc ccnnctctaa ngaaaacncc
                                                                     720
ntcctnnnca ccatccccc nngnnacgnc tancaangna tcccttttt tanaaacggg
                                                                     780
cccccncq
                                                                     789
      <210> 33
      <211> 793
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(793)
      <223> n = A,T,C or G
      <400> 33
gacagaacat gttggatggt ggagcacctt tctatacgac ttacaggaca gcagatgggg
                                                                      60
aattcatggc tgttggagca atanaacccc agttctacga gctgctgatc aaaggacttg
                                                                     120
gactaaagtc tgatgaactt cccaatcaga tgagcatgga tgattggcca gaaatgaana
                                                                     180
agaagtttgc agatgtattt gcaaagaaga cgaaggcaga gtggtgtcaa atctttgacg
                                                                     240
gcacagatgc ctgtgtgact ccggttctga cttttgagga ggttgttcat catgatcaca
                                                                     300
acaangaacg gggctcgttt atcaccantg aggagcagga cgtgagcccc cgccctgcac
                                                                    360
ctctgctgtt aaacacccca gccatccctt ctttcaaaag ggatccacta cttctagagc
                                                                    420
ggncgccacc gcggtggagc tccagctttt gttcccttta gtgagggtta attgcgcgct
                                                                    480
tggcgtaatc atggtcatan ctgtttcctg tgtgaaattg ttatccgctc acaattccac
                                                                    540
acaacatacg anccggaagc atnaaatttt aaagcctggn ggtngcctaa tgantgaact
                                                                    600
nactcacatt aattggcttt gcgctcactg cccgctttcc agtccggaaa acctgtcctt
                                                                    660
gccagctgcc nttaatgaat cnggccaccc cccggggaaa aggcngtttg cttnttgggg
                                                                    720
cgcncttccc gctttctcgc ttcctgaant ccttccccc ggtctttcgg cttgcggcna
                                                                    780
acggtatcna cct
                                                                    793
     <210> 34
     <211> 756
     <212> DNA
     <213> Homo sapien
     <220>
     <221> misc_feature
     <222> (1)...(756)
     <223> n = A,T,C or G
     <400> 34
gccgcgaccg gcatgtacga gcaactcaag ggcgagtgga accgtaaaag ccccaatctt
                                                                     60
ancaagtgcg gggaanagct gggtcgactc aagctagttc ttctggagct caacttcttg
                                                                    120
```

```
ccaaccacag ggaccaagct gaccaaacag cagctaattc tggcccgtga catactggaq
                                                                        180
atcggggccc aatggagcat cctacgcaan gacatcccct ccttcgagcg ctacatggcc
                                                                        240
cagctcaaat gctactactt tgattacaan gagcagctcc ccgagtcagc ctatatgcac
                                                                        300
cagetettgg geeteaacet cetetteetg etgteecaga acegggtgge tgantnecae
                                                                        360
acgganttgg ancggctgcc tgcccaanga catacanacc aatgtctaca tcnaccacca
                                                                        420
gtgtcctgga gcaatactga tgganggcag ctaccncaaa gtnttcctgg ccnagqqtaa
                                                                        480
catcccccgc cgagagctac accttcttca ttgacatcct gctcgacact atcagggatg
                                                                        540
aaaatcgcng ggttgctcca gaaaggctnc aanaanatcc ttttcnctga aggcccccgg
                                                                        600
athenetagt netagaateg georgecate geggtggane etceaacett teqtineect
                                                                        660
ttactgaggg ttnattgccg cccttggcgt tatcatggtc acnccngttn cctgtgttga
                                                                        720
aattnttaac ccccacaat tccacgccna cattng
                                                                        756
      <210> 35
      <211> 834
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(834)
      <223> n = A, T, C \text{ or } G
      <400> 35
ggggatetet anatenacet gnatgeatgg ttgteggtgt ggtegetgte gatgaanatg
                                                                        60
aacaggatet tgeeettgaa getetegget getgtnttta agttgeteag tetgeegtea
                                                                       120
tagtcagaca cnctcttggg caaaaaacan caggatntga gtcttgattt cacctccaat
                                                                       180
aatcttcngg gctgtctgct cggtgaactc gatgacnang ggcagctggt tgtgtntgat
                                                                       240
asantccanc angitetect tggtgacete cectteasag ttgtteegge etteateasa
                                                                       300
cttctnnaan angannance canctttgtc gagetggnat ttgganaaca cqtcactqtt
                                                                       360
ggaaactgat cccaaatggt atgtcatcca tcgcctctgc tgcctgcaaa aaacttgctt
                                                                       420
ggcncaaatc cgactccccn tccttgaaag aagccnatca caccccctc cctggactcc
                                                                       480
nncaangact ctnccgctnc cccntccnng cagggttggt ggcannccgg gcccntgcgc
                                                                       540
ttcttcagcc agttcacnat nttcatcagc ccctctgcca gctgttntat tccttggggg
                                                                       600
ggaancegte tetecettee tgaannaact ttgacegtng gaatageege genteneent
                                                                       660
acnincigg cogggitica anticotion tignonnion cotogggica tiotggatti
                                                                       720
nccnaacttt ttccttcccc cnccccncgg ngtttggntt tttcatnggg ccccaactct
                                                                       780
getnttggcc anteccetgg gggentntan encecetnt ggtccentnq qqcc
                                                                       834
      <210> 36
      <211> 814
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(814)
      \langle 223 \rangle n = A,T,C or G
      <400> 36
eggnegettt cengeegege eeegttteea tgacnaagge teeetteang ttaaataenn
                                                                        60
cctagnaaac attaatgggt tgctctacta atacatcata cnaaccagta agcctgccca
                                                                       120
naacgccaac tcaggccatt cctaccaaag gaagaaaggc tggtctctcc acccctqta
                                                                       180
ggaaaggcct gccttgtaag acaccacaat ncggctgaat ctnaagtctt gtgttttact
                                                                       240
aatggaaaaa aaaaataaac aanaggtttt gttctcatgg ctgcccaccg caqcctgqca
                                                                       300
ctaaaacanc ccagcgctca cttctgcttg ganaaatatt ctttgctctt ttggacatca
                                                                       360
```

```
ggcttgatgg tatcactgcc acntttccac ccagctgggc ncccttcccc catntttgtc
                                                                        420
antganctgg aaggeetgaa nettagtete caaaagtete ngeecacaag aceggeeace
                                                                        480
aggggangtc ntttncagtg gatctgccaa anantacccn tatcatcnnt gaataaaaag
                                                                        540
gcccctgaac ganatgcttc cancancctt taagacccat aatcctngaa ccatggtgcc
                                                                        600
cttccggtct gatccnaaag gaatgttcct gggtcccant ccctcctttg ttncttacgt
                                                                        660
tgtnttggac centgetngn atnacecaan tganatecee ngaageacee tneeeetgge
                                                                        720
atttganttt cntaaattct ctgccctacn nctgaaagca cnattccctn ggcnccnaan
                                                                        780
ggngaactca agaaggtctn ngaaaaacca cncn
                                                                        814
      <210> 37
      <211> 760
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(760)
      <223> n = A.T.C or G
      <400> 37
gcatgctgct cttcctcaaa gttgttcttg ttgccataac aaccaccata ggtaaagcgg
                                                                        60
gcgcagtgtt cgctgaaggg gttgtagtac cagcgcggga tgctctcctt gcagagtcct
                                                                       120
gtgtctggca ggtccacgca atgccctttg tcactgggga aatggatgcg ctggagctcg
                                                                       180
tenaanceae tegtgtattt tteacangea geeteeteeg aagenteegg geagttgggg
                                                                       240
gtgtcgtcac actccactaa actgtcgatn cancagccca ttgctgcagc ggaactgggt
                                                                       300
gggctgacag gtgccagaac acactggatn ggcctttcca tggaagggcc tgggggaaat
                                                                       360
cncctnance caaactgeet etcaaaggee acettgeaca eccegacagg etagaaatge
                                                                       420
actittette ccaaaggtag tigitetigi igeccaagea neetecanea aaccaaaane
                                                                       480
ttgcaaaatc tgctccgtgg gggtcatnnn taccanggtt ggggaaanaa acccggcngn
                                                                       540
gancenectt gtttgaatge naaggnaata atecteetgt ettgettggg tggaanagea
                                                                       600
caattgaact gttaacnttg ggccgngttc cnctngggtg gtctgaaact aatcaccgtc
                                                                       660
actggaaaaa ggtangtgcc ttccttgaat tcccaaantt cccctngntt tgggtnnttt
                                                                       720
ctectetnee ctaaaaateg tntteeecce centanggeg
                                                                       760
      <210> 38
      <211> 724
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(724)
      <223> n = A,T,C or G
      <400> 38
ttttttttt ttttttttt tttttttt tttttaaaaa ccccctccat tgaatgaaaa
                                                                        60
cttccnaaat tgtccaaccc cctcnnccaa atnnccattt ccggggggg gttccaaacc
                                                                       120
caaattaatt ttgganttta aattaaatnt tnattngggg aanaanccaa atgtnaagaa
                                                                       180
aatttaaccc attatnaact taaatnootn gaaaccontg gnttocaaaa atttttaacc
                                                                       240
cttaaatccc tccgaaattg ntaanggaaa accaaattcn cctaaggctn tttgaaggtt
                                                                       300
ngatttaaac ccccttnant tnttttnacc cnngnctnaa ntatttngnt tccggtgttt
                                                                      360
tectnttaan entnggtaac teeegntaat gaannneest aanceaatta aacegaattt
                                                                      420
tttttgaatt ggaaattccn ngggaattna ccggggtttt tcccntttgg gggccatncc
                                                                      480
cccnctttcg gggtttgggn ntaggttgaa tttttnnang ncccaaaaaa ncccccaana
                                                                      540
aaaaaactcc caagnnttaa ttngaatntc ccccttccca ggccttttgg gaaaggnggg
                                                                      600
```

```
tttntggggg cengggantt entteeceen ttneeneec ceceeenggt aaanggttat
                                                                       660
ngnntttggt ttttgggccc cttnanggac cttccggatn gaaattaaat ccccgggncg
                                                                        720
gccg
                                                                       724
      <210> 39
      <211> 751
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(751)
      <223> n = A, T, C or G
      <400> 39
tttttttttt tttttctttg ctcacattta atttttattt tgatttttt taatgctgca
                                                                        60
caacacaata tttatttcat ttgtttcttt tatttcattt tatttgtttg ctgctgctgt
                                                                       120
tttatttatt tttactgaaa gtgagaggga acttttgtgg ccttttttcc ttttctgta
                                                                       180
ggccgcctta agctttctaa atttggaaca tctaagcaag ctgaanggaa aagggggttt
                                                                       240
cgcaaaatca ctcgggggaa nggaaaggtt gctttgttaa tcatgcccta tggtgggtga
                                                                       300
ttaactgctt gtacaattac ntttcacttt taattaattg tgctnaangc tttaattana
                                                                       360
cttgggggtt ccctccccan accaaccccn ctgacaaaaa gtgccngccc tcaaatnatg
                                                                       420
teceggennt entigaaaca caengengaa ngtteteatt nteceenene cagginaaaa
                                                                       480
tgaagggtta ccatntttaa cnccacctcc acntggcnnn gcctgaatcc tcnaaaancn
                                                                       540
ccctcaanch aatthctnng ccccggtchc gcntnngtcc chcccgggct ccgggaanth
                                                                       600
caccccnga annonntnnc naacnaaatt ccgaaaatat tcccnntcnc tcaattcccc
                                                                       660
cnnagactnt cctcnncnan cncaattttc ttttnntcac gaacncgnnc cnnaaaatgn
                                                                       720
nnnncncctc cnctngtccn naatcnccan c
                                                                       751
      <210> 40
      <211> 753
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(753)
      <223> n = A,T,C or G
      <400> 40
gtggtatttt ctgtaagatc aggtgttcct ccctcgtagg tttagaggaa acaccctcat
                                                                       60
agatgaaaac cccccgaga cagcagcact gcaactgcca agcagccggg gtaggagggg
                                                                       120
cgccctatgc acagctgggc ccttgagaca gcagggcttc gatgtcaggc tcgatgtcaa
                                                                       180
tggtctggaa gcggcggctg tacctgcgta ggggcacacc gtcagggccc accaggaact
                                                                      240
tctcaaagtt ccaggcaacn tcgttgcgac acaccggaga ccaggtgatn agcttggggt
                                                                      300
cggtcataan cgcggtggcg tcgtcgctgg gagctggcag ggcctcccgc aggaaggcna
                                                                      360
ataaaaggtg cgccccgca ccgttcanct cgcacttctc naanaccatq angttgggct
                                                                      420
cnaacccacc accannecgg actteettga nggaatteec aaatetette gntettggge
                                                                      480
ttctnctgat gccctanctg gttgcccngn atgccaanca nccccaancc ccggggtcct
                                                                      540
aaancaccon cotcotontt toatotgggt tnttntcccc ggaccntggt tootctcaag
                                                                      600
ggancccata tetenacean tacteacent necececent gnnacecane ettetannon
                                                                      660
ttcccncccg ncctctggcc cntcaaanan gcttncacna cctgggtctg ccttccccc
                                                                      720
tnecetatet gnacecenen tttgtetean tnt
                                                                      753
```

```
<211> 341
       <212> DNA
       <213> Homo sapien
       <400> 41
actatatcca tcacaacaga catgcttcat cccatagact tcttgacata gcttcaaatg
                                                                         60
agtgaaccca tccttgattt atatacatat atgttctcag tattttggga gcctttccac
                                                                        120
ttctttaaac cttgttcatt atgaacactg aaaataggaa tttgtgaaga gttaaaaagt
                                                                        180
tatagcttgt ttacgtagta agtttttgaa gtctacattc aatccagaca cttagttgag
                                                                        240
tgttaaactg tgatttttaa aaaatatcat ttgagaatat tctttcagag gtattttcat
                                                                        300
ttttactttt tgattaattg tgttttatat attagggtag t
                                                                        341
       <210> 42
       <211> 101
       <212> DNA
      <213> Homo sapien
      <400> 42
acttactgaa tttagttctg tgctcttcct tatttagtgt tgtatcataa atactttgat
                                                                         60
gtttcaaaca ttctaaataa ataattttca gtggcttcat a
                                                                        101
      <210> 43
      <211> 305
      <212> DNA
      <213> Homo sapien
      <400> 43
acatctttgt tacagtctaa gatgtgttct taaatcacca ttccttcctg gtcctcaccc
                                                                        60
tccagggtgg tctcacactg taattagagc tattgaggag tctttacagc aaattaagat
                                                                       120
tcagatgcct tgctaagtct agagttctag agttatgttt cagaaagtct aagaaaccca
                                                                       180
cctcttgaga ggtcagtaaa gaggacttaa tatttcatat ctacaaaatg accacaggat
                                                                       240
tggatacaga acgagagtta tcctggataa ctcagagctg agtacctgcc cgggggccgc
                                                                       300
tcgaa
                                                                       305
      <210> 44
      <211> 852
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(852)
      <223> n = A,T,C or G
      <400> 44
acataaatat cagagaaaag tagtctttga aatatttacg tccaggagtt ctttgtttct
                                                                        60
gattatttgg tgtgtgtttt ggtttgtgtc caaagtattg gcagcttcag ttttcatttt
                                                                       120
ctctccatcc tcgggcattc ttcccaaatt tatataccag tcttcgtcca tccacacgct
                                                                       180
ccagaatttc tcttttgtag taatatctca tagctcggct gagcttttca taggtcatgc
                                                                       240
tgctgttgtt cttcttttta ccccatagct gagccactgc ctctgatttc aagaacctga
                                                                       300
agacgccctc agatcggtct tcccatttta ttaatcctgg gttcttgtct gggttcaaga
                                                                       360
ggatgtcgcg gatgaattcc cataagtgag tccctctcgg gttgtgcttt ttggtgtggc
                                                                       420
acttggcagg ggggtcttgc tectttttca tatcaggtga ctctgcaaca ggaaggtgac
                                                                       480
tggtggttgt catggagatc tgagcccggc agaaagtttt gctgtccaac aaatctactg
                                                                       540
tgctaccata gttggtgtca tataaatagt tctngtcttt ccaggtgttc atgatggaag
                                                                       600
```

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gctcagtttg ttcagtcttg acaatgacat tgtgtgtgga ctggaacagg tcactactgc
                                                                        660
actggccgtt ccacttcaga tgctgcaagt tgctgtagag gagntgcccc gccgtccctg
                                                                        720
ccgcccgggt gaactcctgc aaactcatgc tgcaaaggtg ctcgccgttg atgtcgaact
                                                                        780
cntggaaagg gatacaattg gcatccagct ggttggtgtc caggaggtga tggagccact
                                                                        840
cccacacctg gt
                                                                        852
      <210> 45
      <211> 234
       <212> DNA
      <213> Homo sapien
      <400> 45
acaacagacc cttgctcgct aacgacctca tgctcatcaa gttggacgaa tccgtgtccg
                                                                         60
agtotgacac catcoggage atcagcattg cttcgcagtg ccctaccgcg gggaactctt
                                                                        120
gcctcgtttc tggctggggt ctgctggcga acggcagaat gcctaccgtg ctgcagtgcg
                                                                        180
tgaacgtgtc ggtggtgtct gaggaggtct gcagtaagct ctatgacccg ctgt
                                                                       234
      <210> 46
      <211> 590
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(590)
      <223> n = A,T,C or G
      <400> 46
actttttatt taaatgttta taaggcagat ctatgagaat gatagaaaac atggtgtgta
                                                                        60
atttgatage aatattttgg agattacaga gttttagtaa ttaccaatta cacagttaaa
                                                                       120
aagaagataa tatattccaa gcanatacaa aatatctaat gaaagatcaa ggcaggaaaa
                                                                       180
tgantataac taattgacaa tggaaaatca attttaatgt gaattgcaca ttatccttta
                                                                       240
aaagctttca aaanaaanaa ttattgcagt ctanttaatt caaacagtgt taaatggtat
                                                                       300
caggataaan aactgaaggg canaaagaat taattttcac ttcatgtaac ncacccanat
                                                                       360
ttacaatggc ttaaatgcan ggaaaaagca gtggaagtag ggaagtantc aaggtctttc
                                                                       420
tggtctctaa tctgccttac tctttgggtg tggctttgat cctctggaga cagctgccag
                                                                       480
ggctcctgtt atatccacaa tcccagcagc aagatgaagg gatgaaaaag gacacatgct
                                                                       540
gccttccttt gaggagactt catctcactg gccaacactc agtcacatgt
                                                                       590
      <210> 47
      <211> 774
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(774)
      <223> n = A,T,C or G
      <400> 47
acaagggggc ataatgaagg agtggggana gattttaaag aaggaaaaaa aacgaggccc
                                                                       60
tgaacagaat tttcctgnac aacggggctt caaaataatt ttcttgggga ggttcaagac
                                                                      120
gcttcactgc ttgaaactta aatggatgtg ggacanaatt ttctgtaatg accctgaggg
                                                                      180
cattacagac gggactctgg gaggaaggat aaacagaaag gggacaaagg ctaatcccaa
                                                                      240
aacatcaaag aaaggaaggt ggcgtcatac ctcccagcct acacagttct ccagggctct
                                                                      300
```

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cctcatccct ggaggacgac agtggaggaa caactgacca tgtccccagg ctcctgtgtg
                                                                          360
 ctggctcctg gtcttcagcc cccagctctg gaagcccacc ctctgctgat cctgcgtggc
                                                                          420
 ccacactcct tgaacacaca tccccaggtt atattcctgg acatggctga acctcctatt
                                                                          480
 cctacttccg agatgccttg ctccctgcag cctgtcaaaa tcccactcac cctccaaacc
 acggcatggg aagcetttet gaettgeetg attacteeag catettggaa caateeetga
                                                                          540
                                                                         600
 ttccccactc cttagaggca agatagggtg gttaagagta gggctggacc acttggagcc
                                                                         660
 aggetgetgg etteaaattn tggeteattt acgagetatg ggaeettggg caagtnatet
                                                                         720
 tcacttctat gggcntcatt ttgttctacc tgcaaaatgg gggataataa tagt
                                                                         774
       <210> 48
       <211> 124
       <212> DNA
       <213> Homo sapien
       <220>
       <221> misc_feature
       <222> (1)...(124)
       <223> n = A,T,C or G
       <400> 48
canaaattga aattttataa aaaggcattt ttctcttata tccataaaat gatataattt
                                                                          60
ttgcaantat anaaatgtgt cataaattat aatgttcctt aattacagct caacgcaact
                                                                         120
tggt
                                                                         124
       <210> 49
       <211> 147
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(147)
      \langle 223 \rangle n = A,T,C or G
      <400> 49
gccgatgcta ctattttatt gcaggaggtg ggggtgtttt tattattctc tcaacagctt
                                                                         60
tgtggctaca ggtggtgtct gactgcatna aaaanttttt tacgggtgat tgcaaaaatt
                                                                        120
ttagggcacc catatcccaa gcantgt
                                                                        147
      <210> 50
      <211> 107
      <212> DNA
      <213> Homo sapien
      <400> 50
acattaaatt aataaaagga ctgttggggt tctgctaaaa cacatggctt gatatattgc
                                                                        60
atggtttgag gttaggagga gttaggcata tgttttggga gaggggt
                                                                        107
      <210> 51
      <211> 204
      <212> DNA
      <213> Homo sapien
      <400> 51
gtcctaggaa gtctagggga cacacgactc tggggtcacg gggccgacac acttgcacgg
                                                                        60
```

```
cgggaaggaa aggcagagaa gtgacaccgt cagggggaaa tgacagaaag gaaaatcaag
                                                                        120
gccttgcaag gtcagaaagg ggactcaggg cttccaccac agccctgccc cacttggcca
                                                                        180
cctccctttt gggaccagca atgt
                                                                        204
      <210> 52
      <211> 491
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(491)
      \langle 223 \rangle n = A,T,C or G
      <400> 52
acaaagataa catttatctt ataacaaaaa tttgatagtt ttaaaggtta gtattgtgta
                                                                         60
gggtattttc caaaagacta aagagataac tcaggtaaaa agttagaaat gtataaaaca
                                                                        120
ccatcagaca ggtttttaaa aaacaacata ttacaaaatt agacaatcat ccttaaaaaa
                                                                        180
aaaacttctt gtatcaattt cttttgttca aaatgactga cttaantatt tttaaatatt
                                                                        240
tcanaaacac ttcctcaaaa attttcaana tggtagcttt canatgtncc ctcagtccca
                                                                        300
atgttgctca gataaataaa tctcgtgaga acttaccacc caccacaaqc tttctqqqqc
                                                                        360
atgcaacagt gtcttttctt tnctttttct tttttttttt ttacaggcac agaaactcat
                                                                        420
caattttatt tggataacaa agggtctcca aattatattg aaaaataaat ccaaqttaat
                                                                        480
atcactcttg t
                                                                        491
      <210> 53
      <211> 484
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(484)
      <223> n = A,T,C or G
      <400> 53
acataattta gcagggctaa ttaccataag atgctattta ttaanaggtn tatgatctga
                                                                        60
gtattaacag ttgctgaagt ttggtatttt tatgcagcat tttctttttg ctttgataac
                                                                       120
actacagaac ccttaaggac actgaaaatt agtaagtaaa gttcagaaac attagctqct
                                                                       180
caatcaaatc tctacataac actatagtaa ttaaaacgtt aaaaaaaagt gttgaaatct
                                                                       240
gcactagtat anaccgctcc tgtcaggata anactgcttt ggaacagaaa gggaaaaanc
                                                                       300
agctttgant ttctttgtgc tgatangagg aaaggctgaa ttaccttgtt gcctctccct
                                                                       360
aatgattggc aggtcnggta aatnccaaaa catattccaa ctcaacactt cttttccncq
                                                                       420
tancttgant ctgtgtattc caggancagg cggatggaat gggccagccc ncgqatqttc
                                                                       480
cant
                                                                       484
      <210> 54
      <211> 151
      <212> DNA
      <213> Homo sapien
      <400> 54
actaaacctc gtgcttgtga actccataca gaaaacggtg ccatccctga acacggctgg
                                                                        60
ccactgggta tactgctgac aaccgcaaca acaaaaacac aaatccttgg cactggctag
                                                                       120
tctatgtcct ctcaagtgcc tttttgtttg t
                                                                       151
```

```
<210> 55
       <211> 91
       <212> DNA
       <213> Homo sapien
       <400> 55
 acctggcttg tctccgggtg gttcccggcg cccccacgg tccccagaac ggacactttc
                                                                          60
 gccctccagt ggatactcga gccaaagtgg t
                                                                          91
       <210> 56
       <211> 133
       <212> DNA
       <213> Homo sapien
       <400> 56
ggcggatgtg cgttggttat atacaaatat gtcattttat gtaagggact tgagtatact
                                                                          60
tggatttttg gtatctgtgg gttgggggga cggtccagga accaataccc catggatacc
                                                                         120
aagggacaac tgt
                                                                         133
      <210> 57
      <211> 147
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(147)
      <223> n = A, T, C or G
      <400> 57
actctggaga acctgagccg ctgctccgcc tctgggatga ggtgatgcan gcngtggcgc
                                                                         60
gactgggage tgagecette cetttgegee tgeeteagag gattgttgee gaentgeana
                                                                        120
tctcantggg ctggatncat gcagggt
                                                                        147
      <210> 58
      <211> 198
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(198)
      \langle 223 \rangle n = A,T,C or G
      <400> 58
acagggatat aggtttnaag ttattgtnat tgtaaaatac attgaatttt ctgtatactc
                                                                         60
tgattacata catttatcct ttaaaaaaga tgtaaatctt aatttttatg ccatctatta
                                                                        120
atttaccaat gagttacctt gtaaatgaga agtcatgata gcactgaatt ttaactagtt
                                                                        180
ttgacttcta agtttggt
                                                                        198
      <210> 59
      <211> 330
      <212> DNA
      <213> Homo sapien
```

<400> 59					
acaacaaatg ggttgtgagg	aagtcttatc	agcaaaactg	gtgatggcta	ctgaaaagat	6
ccattgaaaa ttatcattaa	tgattttaaa	tgacaagtta	tcaaaaactc	actcaatttt	12
cacctgtgct agcttgctaa	aatgggagtt	aactctagag	caaatatagt	atcttctgaa	180
tacagtcaat aaatgacaaa	gccagggcct	acaggtggtt	tccagacttt	ccagacccag	240
cagaaggaat ctatttatc	acatggatct	ccgtctgtgc	tcaaaatacc	taatgatatt	300
tttcgtcttt attggacttc	tttgaagagt	5 5 5			330
<210> 60					
<211> 175					
<212> DNA					
<213> Homo sapi	en	•			
<400> 60					
accgtgggtg ccttctacat	tcctgacggc	tccttcacca	acatctggtt	ctacttcggc	60
gtcgtgggct ccttcctctt	catcctcatc	cagctggtgc	toctcatcoa	ctttgcgcac	120
tcctggaacc agcggtggct	gggcaaggcc	gaggagtgcg	attcccgtgc	ctggt	175
<210> 61					
<211> 154					
<212> DNA					
<213> Homo sapie	en				
<400> 61					
accccacttt tcctcctgtg	agcagtctgg	acttctcact	gctacatgat	gagggtgagt	60
ggttgttgct cttcaacagt	atcctcccct	ttccggatct	actaeaccaa	acagcagtgc	120
tggactgcac agccccgggg	ctccacattg	ctgt	33-5-55	acageagege	154
<210> 62					
<211> 30					
<211> 30 <212> DNA					
<213> Homo sapie	en				
<400> 62					
cgctcgagcc ctatagtgag	tcgtattaga				30
<210> 63					
<211> 89					
<212> DNA					
<213> Homo sapie	en				
<400> 63					
acaagtcatt tcagcaccct	ttgctcttca	aaactgacca	tcttttatat	ttaatgcttc	60
ctgtatgaat aaaaatggtt		J			89
<210> 64					
<211> 97					
<212> DNA					
<213> Homo sapie	en				
<400> 64					
accggagtaa ctgagtcggg	acqctgaatc	tgaatccacc	aataaataaa	aattetaeaa	60
aatcagtgca tccaggattg				3300009009	97

```
<210> 65
      <211> 377
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(377)
      <223> n = A.T.C or G
      <400> 65
acaacaanaa ntcccttctt taggccactg atggaaacct ggaaccccct tttgatggca
                                                                         60
gcatggcgtc ctaggccttg acacagcggc tggggtttgg gctntcccaa accgcacacc
                                                                        120
ccaaccctgg tctacccaca nttctggcta tgggctgtct ctgccactga acatcagggt
                                                                        180
tcggtcataa natgaaatcc caanggggac agaggtcagt agaggaagct caatgagaaa
                                                                        240
ggtgctgttt gctcagccag aaaacagctg cctggcattc gccgctgaac tatgaacccg
                                                                        300
tgggggtgaa ctacccccan gaggaatcat gcctgggcga tgcaanggtg ccaacaggag
                                                                        360
gggcgggagg agcatgt
                                                                        377
      <210> 66
      <211> 305
      <212> DNA
      <213> Homo sapien
      <400> 66
acgcctttcc ctcagaattc agggaagaga ctgtcgcctg ccttcctccg ttgttgcgtg
                                                                        60
agaacccgtg tgccccttcc caccatatcc accctcgctc catctttgaa ctcaaacacg
                                                                       120
aggaactaac tgcaccctgg tcctctcccc agtccccagt tcaccctcca tccctcacct
                                                                       180
tectecacte taagggatat caacactgee cageacaggg geeetgaatt tatgtggttt
                                                                       240
ttatatattt tttaataaga tgcactttat gtcatttttt aataaagtct gaagaattac
                                                                       300
tgttt
                                                                       305
      <210> 67
      <211> 385
      <212> DNA
      <213> Homo sapien
      <400> 67
actacacaca ctccacttgc ccttgtgaga cactttgtcc cagcacttta ggaatgctga
                                                                        60
ggtcggacca gccacatctc atgtgcaaga ttgcccagca gacatcaggt ctgagagttc
                                                                       120
cccttttaaa aaaggggact tgcttaaaaa agaagtctag ccacgattgt gtagagcagc
                                                                       180
tgtgctgtgc tggagattca cttttgagag agttctcctc tgagacctga tctttagagg
                                                                       240
ctgggcagtc ttgcacatga gatggggctg gtctgatctc agcactcctt agtctgcttg
                                                                       300
cctctcccag ggccccagcc tggccacacc tgcttacagg gcactctcag atgcccatac
                                                                       360
catagtttct gtgctagtgg accgt
                                                                       385
      <210> 68
      <211> 73
      <212> DNA
      <213> Homo sapien
      <400> 68
acttaaccag atatatttt accccagatg gggatattct ttgtaaaaaa tgaaaataaa
                                                                        60
gtttttttaa tgg
                                                                        73
```

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<210> 69
       <211> 536
       <212> DNA
       <213> Homo sapien
       <220>
      <221> misc_feature
      <222> (1)...(536)
      \langle 223 \rangle n = A,T,C or G
      <400> 69
actagtccag tgtggtggaa ttccattgtg ttgggggctc tcaccctcct ctcctgcagc
                                                                          60
tccagctttg tgctctgcct ctgaggagac catggcccag catctgagta ccctgctgct
                                                                         120
cctgctggcc accctagctg tggccctggc ctggagcccc aaggaggagg ataggataat
                                                                         180
cccgggtggc atctataacg cagacctcaa tgatgagtgg gtacagcgtg cccttcactt
                                                                         240
cgccatcage gagtataaca aggccaccaa agatgactae tacagacgte egetgegggt
                                                                         300
actaagagee aggeaacaga eegttggggg ggtgaattae ttettegaeg tagaggtggg
                                                                         360
ccgaaccata tgtaccaagt cccagcccaa cttggacacc tgtgccttcc atgaacagcc
                                                                         420
agaactgcag aagaaacagt tgtgctcttt cgagatctac gaagttccct ggggagaaca
                                                                         480
gaangteeet gggtgaaate caggtgteaa gaaateetan ggatetgttg eeagge
                                                                        536
      <210> 70
      <211> 477
      <212> DNA
      <213> Homo sapien
     <400> 70
atgaccecta acaggggeee teteageeet ectaatgace teeggeetag ceatgtgatt
                                                                         60
tcacttccac tccataacgc tcctcatact aggcctacta accaacacac taaccatata
                                                                        120
ccaatgatgg cgcgatgtaa cacgagaaag cacataccaa ggccaccaca caccacctgt
                                                                        180
ccaaaaaggc cttcgatacg ggataatcct atttattacc tcagaagttt ttttcttcgc
                                                                        240
agggattttt ctgagccttt taccactcca gcctagcccc taccccccaa ctaggagggc
                                                                        300
actggccccc aacaggcatc accccgctaa atcccctaga agtcccactc ctaaacacat
                                                                        360
ccgtattact cgcatcagga gtatcaatca cctgagctca ccatagtcta atagaaaaca
                                                                        420
accgaaacca aattattcaa agcactgctt attacaattt tactgggtct ctatttt
                                                                        477
      <210> 71
      <211> 533
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(533)
      \langle 223 \rangle n = A,T,C or G
      <400> 71
agagctatag gtacagtgtg atctcagctt tgcaaacaca ttttctacat agatagtact
                                                                         60
aggtattaat agatatgtaa agaaagaaat cacaccatta ataatggtaa gattggttta
                                                                       120
tgtgatttta gtggtatttt tggcaccctt atatatgttt tccaaacttt cagcagtgat
                                                                        180
attatttcca taacttaaaa agtgagtttg aaaaagaaaa tctccagcaa gcatctcatt
                                                                        240
taaataaagg tttgtcatct ttaaaaatac agcaatatgt gactttttaa aaaagctgtc
                                                                       300
aaataggtgt gaccctacta ataattatta gaaatacatt taaaaacatc gagtacctca
                                                                       360
agtcagtttg ccttgaaaaa tatcaaatat aactcttaga gaaatgtaca taaaagaatg
                                                                       420
cttcgtaatt ttggagtang aggttccctc ctcaattttg tatttttaaa aagtacatgg
                                                                       480
taaaaaaaaa aattcacaac agtatataag gctgtaaaat gaagaattct gcc
                                                                       533
```

```
<210> 72
      <211> 511
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(511)
      <223> n = A,T,C or G
      <400> 72
tattacggaa aaacacacca cataattcaa ctancaaaga anactgcttc agggcgtgta
                                                                      60
aaatgaaagg cttccaggca gttatctgat taaagaacac taaaagaggg acaaggctaa
                                                                     120
aagccgcagg atgtctacac tatancaggc gctatttggg ttggctggag gagctgtgga
                                                                     180
aaacatggan agattggtgc tgganatcgc cgtggctatt cctcattgtt attacanagt
                                                                     240
gaggttctct gtgtgcccac tggtttgaaa accgttctnc aataatgata gaatagtaca
                                                                     300
cacatgagaa ctgaaatggc ccaaacccag aaagaaagcc caactagatc ctcagaanac
                                                                     360
gcttctaggg acaataaccg atgaagaaaa gatggcctcc ttgtgccccc gtctgttatg
                                                                     420
atttetetee attgeagena naaaceegtt ettetaagea aacneaggtg atgatggena
                                                                     480
aaatacaccc cctcttgaag naccnggagg a
                                                                     511
      <210> 73
      <211> 499
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(499)
      <223> n = A,T,C or G
      <400> 73
cagtgccagc actggtgcca gtaccagtac caataacagt gccagtgcca gtgccagcac
                                                                     60
cagtggtggc ttcagtgctg gtgccagcct gaccgccact ctcacatttg ggctcttcgc
                                                                    120
tggccttggt ggagctggtg ccagcaccag tggcagctct ggtgcctgtg gtttctccta
                                                                    180
caagtgagat tttagatatt gttaatcctg ccagtctttc tcttcaagcc agggtgcatc
                                                                    240
ctcagaaacc tactcaacac agcactctag gcagccacta tcaatcaatt gaagttgaca
                                                                    300
360
antctagagg gcccgtttaa acccgctgat cagcctcgac tgtgccttct anttgccagc
                                                                    420
catctgttgt ttgcccctcc cccgntgcct tccttgaccc tggaaagtgc cactcccact
                                                                    480
gtcctttcct aantaaaat
                                                                    499
      <210> 74
      <211> 537
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(537)
     <223> n = A,T,C or G
      <400> 74
tttcatagga gaacacactg aggagatact tgaagaattt ggattcagcc gcgaagagat
                                                                     60
```

```
ttatcagctt aactcagata aaatcattga aagtaataag gtaaaagcta gtctctaact
                                                                       120
tccaggccca cggctcaagt gaatttgaat actgcattta cagtgtagag taacacataa
                                                                       180
cattgtatgc atggaaacat ggaggaacag tattacagtg tcctaccact ctaatcaaga
                                                                       240
aaagaattac agactctgat tctacagtga tgattgaatt ctaaaaatgg taatcattag
                                                                       300
ggcttttgat ttataanact ttgggtactt atactaaatt atggtagtta tactgccttc
                                                                       360
cagtitigett gatatatitg tigatatiaa gattetigae tiatatitig aaigggitet
                                                                       420
actgaaaaan gaatgatata ttcttgaaga catcgatata catttattta cactcttgat
                                                                       480
tctacaatgt agaaaatgaa ggaaatgccc caaattgtat ggtgataaaa gtcccgt
                                                                       537
      <210> 75
      <211> 467
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(467)
      <223> n = A,T,C or G
      <400> 75
caaanacaat tgttcaaaag atgcaaatga tacactactg ctgcagctca caaacacctc
                                                                        60
tgcatattac acgtacctcc tcctgctcct caagtagtgt ggtctatttt gccatcatca
                                                                       120
cctgctgtct gcttagaaga acggctttct gctgcaangg agagaaatca taacagacgg
                                                                       180
tggcacaagg aggccatctt ttcctcatcg gttattgtcc ctagaagcgt cttctgagga
                                                                       240
tetagttggg ctttettet gggtttggge cattteantt eteatgtgtg tactatteta
                                                                       300
tcattattgt ataacggttt tcaaaccngt gggcacncag agaacctcac tctgtaataa
                                                                       360
caatgaggaa tagccacggt gatctccagc accaaatctc tccatgttnt tccagagctc
                                                                       420
ctccagccaa cccaaatagc cgctgctatn gtgtagaaca tccctgn
                                                                       467
      <210> 76
      <211> 400
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(400)
      <223> n = A,T,C or G
      <400> 76
aagctgacag cattcgggcc gagatgtctc gctccgtggc cttagctgtg ctcgcgctac
                                                                       60
tetetette tggeetggag getateeage gtaeteeaaa gatteaggtt taeteacgte
                                                                       120
atccagcaga gaatggaaag tcaaatttcc tgaattgcta tgtgtctggg tttcatccat
                                                                      180
ccgacattga agttgactta ctgaagaatg gagagagaat tgaaaaagtg gagcattcaq
                                                                      240
acttgtcttt cagcaaggac tggtctttct atctcttgta ctacactgaa ttcacccca
                                                                      300
ctgaaaaaga tgagtatgcc tgccgtgtga accatgtgac tttgtcacag cccaagatng
                                                                      360
ttnagtggga tcganacatg taagcagcan catgggaggt
                                                                      400
      <210> 77
      <211> 248
      <212> DNA
      <213> Homo sapien
     <400> 77
ctggagtgcc ttggtgtttc aagcccctgc aggaagcaga atgcaccttc tgaggcacct
                                                                       60
```

```
ccagctgccc cggcggggga tgcgaggctc ggagcaccct tgcccggctg tgattgctgc
                                                                        120
caggeactgt teateteage tittetgies ettigeiese ggeaageget teigeigaaa
                                                                        180
gttcatatct ggagcctgat gtcttaacga ataaaggtcc catgctccac ccgaaaaaaa
                                                                        240
aaaaaaa
                                                                        248
      <210> 78
      <211> 201
      <212> DNA
      <213> Homo sapien
      <400> 78
actagtccag tgtggtggaa ttccattgtg ttgggcccaa cacaatggct acctttaaca
                                                                         60
tcacccagac cccgccctgc ccgtgcccca cgctgctgct aacgacagta tgatgcttac
                                                                        120
tctgctactc ggaaactatt tttatgtaat taatgtatgc tttcttgttt ataaatgcct
                                                                        180
gatttaaaaa aaaaaaaaa a
                                                                        201
      <210> 79
      <211> 552
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(552)
      <223> n = A, T, C or G
      <400> 79
teettttgtt aggtttttga gacaaceeta gacetaaaet gtgtcacaga ettetgaatg
                                                                        60
tttaggcagt gctagtaatt tcctcgtaat gattctgtta ttactttcct attctttatt
                                                                      . 120
cctctttctt ctgaagatta atgaagttga aaattgaggt ggataaatac aaaaaggtag
                                                                       180
tgtgatagta taagtatcta agtgcagatg aaagtgtgtt atatatatcc attcaaaatt
                                                                       240
atgcaagtta gtaattactc agggttaact aaattacttt aatatgctgt tgaacctact
                                                                       300
ctgttccttg gctagaaaaa attataaaca ggactttgtt agtttgggaa gccaaattga
                                                                       360
taatattcta tgttctaaaa gttgggctat acataaanta tnaagaaata tggaatttta
                                                                       420
ttcccaggaa tatggggttc atttatgaat antacccggg anagaagttt tgantnaaac
                                                                       480
cngttttggt taatacgtta atatgtcctn aatnaacaag gcntgactta tttccaaaaa
                                                                       540
aaaaaaaaa aa
                                                                       552
      <210> 80
      <211> 476
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(476)
      <223> n = A,T,C or G
      <400> 80
acagggattt gagatgctaa ggccccagag atcgtttgat ccaaccctct tattttcaga
                                                                        60
ggggaaaatg gggcctagaa gttacagagc atctagctgg tgcgctggca cccctggcct
                                                                       120
cacacagact cccgagtagc tgggactaca ggcacacagt cactgaagca ggccctgttt
                                                                       180
gcaattcacg ttgccacctc caacttaaac attcttcata tgtgatgtcc ttagtcacta
                                                                       240
aggttaaact ttcccaccca gaaaaggcaa cttagataaa atcttagagt actttcatac
                                                                       300
tettetaagt cetettecag ceteactitg agteeteett gggggttgat aggaaninte
                                                                       360
```

```
tcttggcttt ctcaataaaa tctctatcca tctcatgttt aatttggtac gcntaaaaat
                                                                        420
gctgaaaaaa ttaaaatgtt ctggtttcnc tttaaaaaaa aaaaaaaaaa aaaaaa
                                                                        476
      <210> 81
      <211> 232
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(232)
      <223> n = A,T,C or G
      <400> 81
tttttttttg tatgeenten etgtggngtt attgttgetg ceaccetgga ggageceagt
                                                                         60
ttcttctgta tctttctttt ctgggggatc ttcctggctc tgcccctcca ttcccagcct
                                                                        120
ctcatcccca tcttgcactt ttgctagggt tggaggcgct ttcctggtag cccctcagag
                                                                        180
actcagtcag cgggaataag tcctaggggt ggggggtgtg gcaagccggc ct
                                                                        232
      <210> 82
      <211> 383
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(383)
      <223> n = A,T,C or G
      <400> 82
aggcgggagc agaagctaaa gccaaagccc aagaagagtg gcagtgccag cactggtgcc
                                                                        60
agtaccagta ccaataacat gccagtgcca gtgccagcac cagtggtggc ttcagtgctg
                                                                       120
gtgccagcct gaccgccact ctcacatttg ggctcttcgc tggccttggt ggagctggtg
                                                                       180
ccagcaccag tggcagctct ggtgcctgtg gtttctccta caagtgagat tttagatatt
                                                                       240
gttaatcctg ccagtctttc tcttcaagcc agggtgcatc ctcagaaacc tactcaacac
                                                                       300
agcactetng geageeacta teaateaatt gaagttgaca etetgeatta aatetatttg
                                                                       360
ccatttcaaa aaaaaaaaaa aaa
                                                                       383
      <210> 83
      <211> 494
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(494)
      <223> n = A, T, C or G
      <400> 83
accgaattgg gaccgctggc ttataagcga tcatgtcctc cagtattacc tcaacgagca
                                                                        60
gggagatcga gtctatacgc tgaagaaatt tgacccgatg ggacaacaga cctgctcagc
                                                                       120
ccatcctgct cggttctccc cagatgacaa atactctcga caccgaatca ccatcaagaa
                                                                       180
acgetteaag gtgeteatga eccageaace gegeeetgte etetgagggt cettaaactg
                                                                       240
atgtetttte tgecacetgt tacceetegg agacteegta accaaactet teggaetgtg
                                                                       300
agcootgatg cottititgod agcoatacto titiggonico agictotogi ggogatigat
                                                                       360
```

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tatgcttgtg tgaggcaatc atggtggcat cacccatnaa gggaacacat ttgantttt
                                                                         420
tttcncatat tttaaattac naccagaata nttcagaata aatgaattga aaaactctta
                                                                         480
aaaaaaaaa aaaa
                                                                         494
      <210> 84
      <211> 380
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(380)
      \langle 223 \rangle n = A,T,C or G
      <400> 84
gctggtagcc tatggcgtgg ccacggangg gctcctgagg cacgggacag tgacttccca
                                                                         60
agtatectge geogegtett etacegtece tacetgeaga tettegggea gattececag
                                                                        120
gaggacatgg acgtggccct catggagcac agcaactgct cgtcggagcc cggcttctgg
                                                                        180
gcacaccctc ctggggccca ggcgggcacc tgcgtctccc agtatgccaa ctggctggtg
                                                                        240
gtgctgctcc tcgtcatctt cctgctcgtg gccaacatcc tgctggtcac ttgctcattg
                                                                        300
ccatgttcag ttacacattc ggcaaagtac agggcaacag cnatctctac tgggaaggcc
                                                                        360
agcgttnccg cctcatccgg
                                                                        380
      <210> 85
      <211> 481
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(481)
      <223> n = A,T,C or G
      <400> 85
gagttagctc ctccacaacc ttgatgaggt cgtctgcagt ggcctctcgc ttcataccgc
                                                                         60
tnccatcgtc atactgtagg tttgccacca cctcctgcat cttggggcgg ctaatatcca
                                                                        120
ggaaactctc aatcaagtca ccgtcnatna aacctgtggc tggttctgtc ttccgctcgg
                                                                       180
tgtgaaagga tctccagaag gagtgctcga tcttccccac acttttgatg actttattga
                                                                       240
gtcgattctg catgtccagc aggaggttgt accagctctc tgacagtgag gtcaccagcc
                                                                       300
ctatcatgcc nttgaacgtg ccgaagaaca ccgagccttg tgtggggggt gnagtctcac
                                                                       360
ccagattctg cattaccaga nagccgtggc aaaaganatt gacaactcgc ccaggnngaa
                                                                       420
aaagaacacc teetggaagt getngeeget eetegteent tggtggnnge gentneettt
                                                                       480
                                                                       481
      <210> 86
      <211> 472
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(472)
      <223> n = A,T,C or G
      <400> 86
```

```
aacatcttcc tgtataatgc tgtgtaatat cgatccgatn ttgtctgctg agaattcatt
                                                                        60
acttggaaaa gcaacttnaa gcctggacac tggtattaaa attcacaata tgcaacactt
                                                                        120
taaacagtgt gtcaatctgc tcccttactt tgtcatcacc agtctgggaa taagggtatg
                                                                        180
ccctattcac acctgttaaa agggcgctaa gcatttttga ttcaacatct tttttttga
                                                                       240
cacaagtccg aaaaaagcaa aagtaaacag tinttaatti gitagccaat icactiicti
                                                                       300
catgggacag agccatttga tttaaaaagc aaattgcata atattgagct ttgggagctq
                                                                       360
atatntgagc ggaagantag cctttctact tcaccagaca caactccttt catattgqqa
                                                                       420
tgttnacnaa agttatgtct cttacagatg ggatgctttt gtggcaattc tg
                                                                       472
      <210> 87
      <211> 413
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(413)
      <223> n = A,T,C or G
      <400> 87
agaaaccagt atctctnaaa acaacctctc ataccttgtg gacctaattt tgtgtgcgtg
                                                                        60
tgtgtgtgcg cgcatattat atagacaggc acatcttttt tacttttgta aaaqcttatq
                                                                       120
cctctttggt atctatatct gtgaaagttt taatgatctg ccataatgtc ttggggacct
                                                                       180
ttgtcttctg tgtaaatggt actagagaaa acacctatnt tatgagtcaa tctagttngt
                                                                       240
tttattcgac atgaaggaaa tttccagatn acaacactna caaactctcc cttqactaqq
                                                                       300
ggggacaaag aaaagcanaa ctgaacatna gaaacaattn cctggtgaga aattncataa
                                                                       360
acagaaattg ggtngtatat tgaaananng catcattnaa acgttttttt ttt
                                                                       413
      <210> 88
      <211> 448
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(448)
      <223> n = A,T,C or G
      <400> 88
cgcagcgggt cctctctatc tagctccagc ctctcgcctg ccccactccc cgcgtcccgc
                                                                        60
gtectageen accatggeeg ggeecetgeg egeecegetg etectgetgg ecatectgge
                                                                       120
egtggeeetg geegtgagee eegeggeegg etceagteee ggeaageege egegeetggt
                                                                       180
gggaggccca tggaccccgc gtggaagaag aaggtgtgcg gcgtgcactg gactttgccq
                                                                       240
teggenanta caacaaacce geaacnactt ttacenagen egegetgeag gttgtgeege
                                                                       300
cccaancaaa ttgttactng gggtaantaa ttcttggaag ttgaacctgg gccaaacnng
                                                                       360
tttaccagaa ccnagccaat tngaacaatt ncccctccat aacagcccct tttaaaaaaqq
                                                                       420
gaancantcc tgntcttttc caaatttt
                                                                       448
      <210> 89
      <211> 463
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
```

```
<222> (1)...(463)
       <223> n = A, T, C or G
       <400> 89
gaattttgtg cactggccac tgtgatggaa ccattgggcc aggatgcttt gagtttatca
                                                                         60
gtagtgattc tgccaaagtt ggtgttgtaa catgagtatg taaaatgtca aaaaattagc
                                                                        120
agaggtctag gtctgcatat cagcagacag tttgtccgtg tattttgtag ccttgaagtt
                                                                        180
ctcagtgaca agttnnttct gatgcgaagt tctnattcca gtgttttagt cctttgcatc
                                                                        240
tttnatgttn agacttgcct ctntnaaatt gcttttgtnt tctgcaggta ctatctgtgg
                                                                        300
tttaacaaaa tagaannact tctctgcttn gaanatttga atatcttaca tctnaaaatn
                                                                        360
aattetetee ecatannaaa acceangeee ttggganaat ttgaaaaang gnteettenn
                                                                        420
aattennana antteagntn teatacaaca naaenggane eec
                                                                        463
      <210> 90
      <211> 400
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(400)
      <223> n = A,T,C or G
      <400> 90
agggattgaa ggtctnttnt actgtcggac tgttcancca ccaactctac aagttgctgt
                                                                        60
cttccactca ctgtctgtaa gcntnttaac ccagactgta tcttcataaa tagaacaaat
                                                                        120
tcttcaccag tcacatcttc taggaccttt ttggattcag ttagtataag ctcttccact
                                                                       180
tcctttgtta agacttcatc tggtaaagtc ttaagttttg tagaaaggaa tttaattgct
                                                                       240
cgttctctaa caatgtcctc tccttgaagt atttggctga acaacccacc tnaagtccct
                                                                       300
ttgtgcatcc attttaaata tacttaatag ggcattggtn cactaggtta aattctgcaa
                                                                       360
gagtcatctg tctgcaaaag ttgcgttagt atatctgcca
                                                                       400
      <210> 91
      <211> 480
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(480)
      <223> n = A, T, C or G
      <400> 91
gageteggat ecaataatet ttgtetgagg geageacaea tatneagtge eatggnaact
                                                                        60
ggtctacccc acatgggagc agcatgccgt agntatataa ggtcattccc tgagtcagac
                                                                       120
atgcctcttt gactaccgtg tgccagtgct ggtgattctc acacacctcc nnccgctctt
                                                                       180
tgtggaaaaa ctggcacttg nctggaacta gcaagacatc acttacaaat tcacccacga
                                                                       240
gacacttgaa aggtgtaaca aagcgactct tgcattgctt tttgtccctc cggcaccagt
                                                                       300
tgtcaatact aaccegetgg tttgcctcca tcacatttgt gatctgtage tctggataca
                                                                       360
tctcctgaca gtactgaaga acttcttctt ttgtttcaaa agcaactctt ggtgcctgtt
                                                                       420
ngatcaggtt cccatttccc agtccgaatg ttcacatggc atatnttact tcccacaaaa
                                                                       480
      <210> 92
      <211> 477
      <212> DNA
```

```
<213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(477)
      <223> n = A,T,C or G
      <400> 92
atacageeca nateeeacea egaagatgeg ettgttgaet gagaacetga tgeggteact
                                                                         60
ggtcccgctg tagccccagc gactctccac ctgctggaag cggttgatgc tgcactcctt
                                                                        120
cccacgcagg cagcagcggg gccggtcaat gaactccact cgtggcttgg ggttgacggt
                                                                        180
taantgcagg aagaggctga ccacctcgcg gtccaccagg atgcccgact gtgcgggacc
                                                                        240
tgcagcgaaa ctcctcgatg gtcatgagcg ggaagcgaat gangcccagg gccttgccca
                                                                        300
gaacetteeg cetgttetet ggegteacet geagetgetg cegetnacae teggeetegg
                                                                        360
accageggae aaacggegtt gaacageege aceteaegga tgeecantgt gtegegetee
                                                                        420
aggaacggcn ccagcgtgtc caggtcaatg tcggtgaanc ctccgcgggt aatqqcq
                                                                        477
      <210> 93
      <211> 377
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(377)
      <223> n = A, T, C or G
      <400> 93
gaacggctgg accttgcctc gcattgtgct gctggcagga ataccttggc aagcagctcc
                                                                        60
agtocgagoa gooccagaco gotgoogooc gaagotaago otgoototgg cottoccoto
                                                                       120
cgcctcaatg cagaaccant agtgggagca ctgtgtttag agttaagagt gaacactgtn
                                                                       180
tgattttact tgggaatttc ctctgttata tagcttttcc caatgctaat ttccaaacaa
                                                                       240
caacaacaaa ataacatgtt tgcctgttna gttgtataaa agtangtgat tctgtatnta
                                                                       300
aagaaaatat tactgttaca tatactgctt gcaanttctg tatttattgg tnctctggaa
                                                                       360
ataaatatat tattaaa
                                                                       377
      <210> 94
      <211> 495
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(495)
      \langle 223 \rangle n = A,T,C or G
      <400> 94
ccctttgagg ggttagggtc cagttcccag tggaagaaac aggccaggag aantgcgtgc
                                                                        60
cgagctgang cagatttccc acagtgaccc cagagccctg ggctatagtc tctgacccct
                                                                       120
ccaaggaaag accaccttct ggggacatgg gctggagggc aggacctaga ggcaccaagg
                                                                       180
gaaggcccca ttccggggct gttccccgag gaggaaggga aggggctctg tgtgccccc
                                                                       240
acgaggaana ggccctgant cctgggatca nacacccctt cacgtgtatc cccacacaaa
                                                                       300
tgcaagctca ccaaggtccc ctctcagtcc cttccctaca ccctgaacgg ncactggccc
                                                                       360
acacccaccc agancancca cccgccatgg ggaatgtnct caaggaatcg cngggcaacg
                                                                       420
tggactctng tcccnnaagg gggcagaatc tccaatagan gganngaacc cttgctnana
                                                                       480
```

aaaaaaana aaaaa

```
495
       <210> 95
       <211> 472
       <212> DNA
       <213> Homo sapien
       <220>
       <221> misc_feature
       <222> (1)...(472)
       \langle 223 \rangle n = A,T,C or G
       <400> 95
ggttacttgg tttcattgcc accacttagt ggatgtcatt tagaaccatt ttgtctgctc
                                                                          60
cctctggaag ccttgcgcag agcggacttt gtaattgttg gagaataact gctgaatttt
                                                                         120
tagctgtttt gagttgattc gcaccactgc accacaactc aatatgaaaa ctatttnact
                                                                         180
tatttattat cttgtgaaaa gtatacaatg aaaattttgt tcatactgta tttatcaagt
                                                                         240
atgatgaaaa gcaatagata tatattcttt tattatgttn aattatgatt gccattatta
                                                                         300
atcggcaaaa tgtggagtgt atgttctttt cacagtaata tatgcctttt gtaacttcac
                                                                         360
ttggttattt tattgtaaat gaattacaaa attcttaatt taagaaaatg gtangttata
                                                                         420
tttanttcan taatttcttt ccttgtttac gttaattttg aaaagaatgc at
                                                                         472
       <210> 96
       <211> 476
       <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(476)
      <223> n = A,T,C or G
      <400> 96
ctgaagcatt tcttcaaact tntctacttt tgtcattgat acctgtagta agttgacaat
                                                                         60
gtggtgaaat ttcaaaatta tatgtaactt ctactagttt tactttctcc cccaagtctt
                                                                        120
ttttaactca tgatttttac acacacaatc cagaacttat tatatagcct ctaagtcttt
                                                                        180
attetteaca gragargarg aaagagteet ceagrgtert gngcanaarg tretagntar
                                                                        240
agctggatac atacngtggg agttctataa actcatacct cagtgggact naaccaaaat
                                                                        300
tgtgttagtc tcaattccta ccacactgag ggagcctccc aaatcactat attcttatct
                                                                        360
gcaggtactc ctccagaaaa acngacaggg caggcttgca tgaaaaagtn acatctgcgt
                                                                        420
tacaaagtet atetteetea nangtetgtn aaggaacaat ttaatettet agettt
                                                                        476
      <210> 97
      <211> 479
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1) . . . (479)
      <223> n = A, T, C or G
      <400> 97
actctttcta atgctgatat gatcttgagt ataagaatgc atatgtcact agaatggata
                                                                        60
aaataatgct gcaaacttaa tgttcttatg caaaatggaa cgctaatgaa acacagctta
                                                                       120
```

```
caatcgcaaa tcaaaactca caagtgctca tctgttgtag atttagtgta ataagactta
                                                                       180
gattgtgctc cttcggatat gattgtttct canatcttgg gcaatnttcc ttagtcaaat
                                                                       240
caggetacta gaattetgtt attggatatn tgagageatg aaatttttaa naatacaett
                                                                       300
gtgattatna aattaatcac aaatttcact tatacctgct atcagcagct agaaaaacat
                                                                       360
ntnnttttta natcaaagta ttttgtgttt ggaantgtnn aaatgaaatc tgaatgtggg
                                                                       420
ttenatetta tttttteeen gaenaetant tnetttttta gggnetatte tganecate
                                                                       479
      <210> 98
      <211> 461
      <212> DNA
      <213> Homo sapien
      <400> 98
agtgacttgt cctccaacaa aaccccttga tcaagtttgt ggcactgaca atcagaccta
                                                                        60
tgctagttcc tgtcatctat tcgctactaa atgcagactg gaggggacca aaaaggggca
                                                                       120
tcaactccag ctggattatt ttggagcctg caaatctatt cctacttgta cggactttga
                                                                       180
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                                                                       600
actcacccta cttcaaagag aacagtgcct ttcccccatt ctgttgcaat gacaacgtca
                                                                       660
ccaacacage caatgaaace tgcaccaage aaaaggetea egaccaaaaa gtagagggtt
                                                                       720
gcttcaatca gcttttgtat gacatccgaa ctaatgcagt caccgtgggt ggtgtggcag
                                                                       780
ctggaattgg gggcctcgag ctggctgcca tgattgtgtc catgtatctg tactgcaatc
                                                                       840
tacaataagt ccacttctgc ctctgccact actgctgcca catgggaact gtgaagaggc
                                                                       900
accetggeaa geageagtga ttgggggagg ggacaggate taacaatgte acttgggeea
                                                                       960
gaatggacct gccctttctg ctccagactt ggggctagat agggaccact ccttttagcq
                                                                      1020
atgcctgact ttccttccat tggtgggtgg atgggtgggg ggcattccag agcctctaag
                                                                      1080
gtagccagtt ctgttgccca ttcccccagt ctattaaacc cttgatatgc cccctaggcc
                                                                      1140.
tagtggtgat cccagtgctc tactggggga tgagagaaag gcattttata gcctgggcat
                                                                      1200
aagtgaaatc agcagagcct ctgggtggat gtgtagaagg cacttcaaaa tgcataaacc
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<210> 112

<211> 315

<212> PRT

<213> Homo sapien

<400> 112

Met Val Phe Thr Val Arg Leu Leu His Ile Phe Thr Val Asn Lys Gln 5 10 Leu Gly Pro Lys Ile Val Ile Val Ser Lys Met Met Lys Asp Val Phe 25 Phe Phe Leu Phe Phe Leu Gly Val Trp Leu Val Ala Tyr Gly Val Ala -40 Thr Glu Gly Leu Leu Arg Pro Arg Asp Ser Asp Phe Pro Ser Ile Leu Arg Arg Val Phe Tyr Arg Pro Tyr Leu Gln Ile Phe Gly Gln Ile Pro 70 75 Gln Glu Asp Met Asp Val Ala Leu Met Glu His Ser Asn Cys Ser Ser 90 Glu Pro Gly Phe Trp Ala His Pro Pro Gly Ala Gln Ala Gly Thr Cys 105 Val Ser Gln Tyr Ala Asn Trp Leu Val Val Leu Leu Leu Val Ile Phe 120 125 Leu Leu Val Ala Asn Ile Leu Leu Val Asn Leu Leu Ile Ala Met Phe 135 Ser Tyr Thr Phe Gly Lys Val Gln Gly Asn Ser Asp Leu Tyr Trp Lys 150 155 Ala Gln Arg Tyr Arg Leu Ile Arg Glu Phe His Ser Arg Pro Ala Leu 165 170 Ala Pro Pro Phe Ile Val Ile Ser His Leu Arg Leu Leu Arg Gln 180 185 Leu Cys Arg Arg Pro Arg Ser Pro Gln Pro Ser Ser Pro Ala Leu Glu

195 200 His Phe Arg Val Tyr Leu Ser Lys Glu Ala Glu Arg Lys Leu Leu Thr 215 220 Trp Glu Ser Val His Lys Glu Asn Phe Leu Leu Ala Arg Ala Arg Asp 230 235 Lys Arg Glu Ser Asp Ser Glu Arg Leu Lys Arg Thr Ser Gln Lys Val 245 250 Asp Leu Ala Leu Lys Gln Leu Gly His Ile Arg Glu Tyr Glu Gln Arg 265 Leu Lys Val Leu Glu Arg Glu Val Gln Gln Cys Ser Arg Val Leu Gly 275 280 Trp Val Ala Glu Ala Leu Ser Arg Ser Ala Leu Leu Pro Pro Gly Gly 295 Pro Pro Pro Pro Asp Leu Pro Gly Ser Lys Asp 310

<210> 113

<211> 553

<212> PRT

<213> Homo sapien

<400> 113

Met Val Gln Arg Leu Trp Val Ser Arg Leu Leu Arg His Arg Lys Ala 10 Gln Leu Leu Val Asn Leu Leu Thr Phe Gly Leu Glu Val Cys Leu 25 Ala Ala Gly Ile Thr Tyr Val Pro Pro Leu Leu Glu Val Gly Val Glu Glu Lys Phe Met Thr Met Val Leu Gly Ile Gly Pro Val Leu Gly 55 Leu Val Cys Val Pro Leu Gly Ser Ala Ser Asp His Trp Arg Gly 70 75 Arg Tyr Gly Arg Arg Pro Phe Ile Trp Ala Leu Ser Leu Gly Ile 90 Leu Leu Ser Leu Phe Leu Ile Pro Arg Ala Gly Trp Leu Ala Gly Leu 100 105 Leu Cys Pro Asp Pro Arg Pro Leu Glu Leu Ala Leu Leu Ile Leu Gly 120 Val Gly Leu Leu Asp Phe Cys Gly Gln Val Cys Phe Thr Pro Leu Glu 135 140 Ala Leu Leu Ser Asp Leu Phe Arg Asp Pro Asp His Cys Arg Gln Ala 150 155 Tyr Ser Val Tyr Ala Phe Met Ile Ser Leu Gly Gly Cys Leu Gly Tyr 165 170 Leu Leu Pro Ala Ile Asp Trp Asp Thr Ser Ala Leu Ala Pro Tyr Leu 185 Gly Thr Gln Glu Glu Cys Leu Phe Gly Leu Leu Thr Leu Ile Phe Leu 200 Thr Cys Val Ala Ala Thr Leu Leu Val Ala Glu Glu Ala Ala Leu Gly 215 220 Pro Thr Glu Pro Ala Glu Gly Leu Ser Ala Pro Ser Leu Ser Pro His 230 Cys Cys Pro Cys Arg Ala Arg Leu Ala Phe Arg Asn Leu Gly Ala Leu 250 Leu Pro Arg Leu His Gln Leu Cys Cys Arg Met Pro Arg Thr Leu Arg

260 265 Arg Leu Phe Val Ala Glu Leu Cys Ser Trp Met Ala Leu Met Thr Phe 280 285 Thr Leu Phe Tyr Thr Asp Phe Val Gly Glu Gly Leu Tyr Gln Gly Val 295 Pro Arg Ala Glu Pro Gly Thr Glu Ala Arg Arg His Tyr Asp Glu Gly 310 315 Val Arg Met Gly Ser Leu Gly Leu Phe Leu Gln Cys Ala Ile Ser Leu 325 330 Val Phe Ser Leu Val Met Asp Arg Leu Val Gln Arg Phe Gly Thr Arg 345 Ala Val Tyr Leu Ala Ser Val Ala Ala Phe Pro Val Ala Ala Gly Ala 360 Thr Cys Leu Ser His Ser Val Ala Val Val Thr Ala Ser Ala Ala Leu 375 380 Thr Gly Phe Thr Phe Ser Ala Leu Gln Ile Leu Pro Tyr Thr Leu Ala 390 395 Ser Leu Tyr His Arg Glu Lys Gln Val Phe Leu Pro Lys Tyr Arg Gly 405 410 415 Asp Thr Gly Gly Ala Ser Ser Glu Asp Ser Leu Met Thr Ser Phe Leu 420 425 Pro Gly Pro Lys Pro Gly Ala Pro Phe Pro Asn Gly His Val Gly Ala 440 Gly Gly Ser Gly Leu Leu Pro Pro Pro Pro Ala Leu Cys Gly Ala Ser 455 Ala Cys Asp Val Ser Val Arg Val Val Gly Glu Pro Thr Glu Ala 475 Arg Val Val Pro Gly Arg Gly Ile Cys Leu Asp Leu Ala Ile Leu Asp 485 490 Ser Ala Phe Leu Leu Ser Gln Val Ala Pro Ser Leu Phe Met Gly Ser 505 Ile Val Gln Leu Ser Gln Ser Val Thr Ala Tyr Met Val Ser Ala Ala 520 525 Gly Leu Gly Leu Val Ala Ile Tyr Phe Ala Thr Gln Val Val Phe Asp 535 Lys Ser Asp Leu Ala Lys Tyr Ser Ala 550

<210> 114

<211> 241

<212> PRT

<213> Homo sapien

<400> 114

 Met
 Gln
 Cys
 Phe
 Ser
 Phe
 Ile
 Lys
 Thr
 Met
 Met
 Ile
 Leu
 Phe
 Asn
 Leu

 1
 5
 6
 7
 Ala
 Ala
 Ala
 Leu
 Leu
 Ala
 Val
 Gly
 Ile
 Trp
 Val
 Ala
 Ile
 Ala
 Ile
 Phe
 Ile
 Ile

```
85
                                     90
Phe Ile Ala Glu Val Ala Ala Ala Val Val Ala Leu Val Tyr Thr Thr
            100
                                 105
Met Ala Glu His Phe Leu Thr Leu Leu Val Val Pro Ala Ile Lys Lys
                             120
                                                 125
Asp Tyr Gly Ser Gln Glu Asp Phe Thr Gln Val Trp Asn Thr Thr Met
    130
                         135
                                             140
Lys Gly Leu Lys Cys Cys Gly Phe Thr Asn Tyr Thr Asp Phe Glu Asp
                    150
                                         155
Ser Pro Tyr Phe Lys Glu Asn Ser Ala Phe Pro Pro Phe Cys Cys Asn
                                     170
                                                         175
Asp Asn Val Thr Asn Thr Ala Asn Glu Thr Cys Thr Lys Gln Lys Ala
            180
                                 185
His Asp Gln Lys Val Glu Gly Cys Phe Asn Gln Leu Leu Tyr Asp Ile
                             200
Arg Thr Asn Ala Val Thr Val Gly Gly Val Ala Ala Gly Ile Gly Gly
                        215
                                             220
Leu Glu Leu Ala Ala Met Ile Val Ser Met Tyr Leu Tyr Cys Asn Leu
225
                    230
                                         235
Gln
      <210> 115
      <211> 366
      <212> DNA
      <213> Homo sapien
      <400> 115
gctctttctc tcccctcctc tgaatttaat tctttcaact tgcaatttgc aaggattaca
                                                                        60
catttcactg tgatgtatat tgtgttgcaa aaaaaaaaa gtgtctttgt ttaaaattac
                                                                       120
ttggtttgtg aatccatctt gctttttccc cattggaact agtcattaac ccatctctga
                                                                       180
actggtagaa aaacatctga agagctagtc tatcagcatc tgacaggtga attggatggt
                                                                       240
tctcagaacc atttcaccca gacagcctgt ttctatcctg tttaataaat tagtttgggt
                                                                       300
tctctacatg cataacaaac cctgctccaa tctgtcacat aaaagtctgt gacttgaagt
                                                                       360
ttagtc
                                                                       366
      <210> 116
      <211> 282
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(282)
      <223> n = A,T,C or G
      <400> 116
acaaagatga accatttcct atattatagc aaaattaaaa tctacccgta ttctaatatt
                                                                        60
gagaaatgag atnaaacaca atnttataaa gtctacttag agaagatcaa gtgacctcaa
                                                                       120
agactttact attttcatat tttaagacac atgatttatc ctattttagt aacctggttc
                                                                       180
atacgttaaa caaaggataa tgtgaacagc agagaggatt tgttggcaga aaatctatgt
                                                                       240
tcaatctnga actatctana tcacagacat ttctattcct tt
                                                                       282
```

<210> 117 <211> 305

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<212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(305)
      <223> n = A, T, C \text{ or } G
      <400> 117
acacatgtcg cttcactgcc ttcttagatg cttctggtca acatanagga acagggacca
                                                                          60
tatttatcct ccctcctgaa acaattgcaa aataanacaa aatatatgaa acaattgcaa
                                                                         120
aataaggcaa aatatatgaa acaacaggtc tcgagatatt ggaaatcagt caatgaagga
                                                                         180
tactgatccc tgatcactgt cctaatgcag gatgtgggaa acagatgagg tcacctctgt
                                                                         240
gactgcccca gcttactgcc tgtagagagt ttctangctg cagttcagac agggagaaat
                                                                         300
tgggt
                                                                         305
      <210> 118
      <211> 71
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(71)
      <223> n = A,T,C or G
      <400> 118
accaaggtgt ntgaatctct gacgtgggga tctctgattc ccgcacaatc tgagtggaaa
                                                                          60
aantcctggg t
                                                                          71
      <210> 119
      <211> 212
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(212)
      <223> n = A, T, C or G
      <400> 119
actccggttg gtgtcagcag cacgtggcat tgaacatngc aatgtggagc ccaaaccaca
                                                                         60
gaaaatgggg tgaaattggc caactttcta tnaacttatg ttggcaantt tgccaccaac
                                                                        120
agtaagctgg cccttctaat aaaagaaaat tgaaaggttt ctcactaanc ggaattaant
                                                                        180
aatggantca aganactccc aggcctcagc gt
                                                                        212
      <210> 120
      <211> 90
      <212> DNA
     <213> Homo sapien
      <220>
     <221> misc_feature
      <222> (1)...(90)
      <223> n = A, T, C \text{ or } G
```

```
<400> 120
actegttgea nateagggge ecceeagagt cacegttgea ggagteette tggtettgee
                                                                          60
 ctccgccggc gcagaacatg ctggggtggt
                                                                          90
       <210> 121
       <211> 218
       <212> DNA
       <213> Homo sapien
       <220>
       <221> misc_feature
       <222> (1)...(218)
       \langle 223 \rangle n = A,T,C or G
       <400> 121
tgtancgtga anacgacaga nagggttgtc aaaaatggag aanccttgaa gtcattttga
                                                                          60
gaataagatt tgctaaaaga tttggggcta aaacatggtt attgggagac atttctgaag
                                                                         120
atatncangt aaattangga atgaattcat ggttcttttg ggaattcctt tacgatngcc
                                                                         180
agcatanact tcatgtgggg atancagcta cccttgta
                                                                         218
      <210> 122
      <211> 171
      <212> DNA
      <213> Homo sapien
      <400> 122
taggggtgta tgcaactgta aggacaaaaa ttgagactca actggcttaa ccaataaagg
                                                                         60
catttgttag ctcatggaac aggaagtcgg atggtggggc atcttcagtg ctgcatgagt
                                                                        120
caccaccccg gcggggtcat ctgtgccaca ggtccctgtt gacagtgcgg t
                                                                        171
      <210> 123
      <211> 76
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(76)
      <223> n = A,T,C or G
      <400> 123
tgtagcgtga agacnacaga atggtgtgtg ctgtgctatc caggaacaca tttattatca
                                                                         60
ttatcaanta ttqtqt
                                                                         76
      <210> 124
      <211> 131
      <212> DNA
      <213> Homo sapien
      <400> 124
acctttcccc aaggccaatg tcctgtgtgc taactggccg gctgcaggac agctgcaatt
                                                                         60
caatgtgctg ggtcatatgg aggggaggag actctaaaat agccaatttt attctcttgg
                                                                        120
ttaagatttg t
                                                                        131
```

```
<210> 125
      <211> 432
      <212> DNA
      <213> Homo sapien
      <400> 125
actitatica ctggctatga aatagatggt ggaaaattgc gttaccaact ataccactgg
                                                                         60
cttgaaaaag aggtgatagc tcttcagagg acttgtgact tttgctcaga tgctgaagaa
                                                                        120
ctacagtctg catttggcag aaatgaagat gaatttggat taaatgagga tgctgaagat
                                                                        180
ttgcctcacc aaacaaagt gaaacaactg agagaaaatt ttcaggaaaa aagacagtgg
                                                                        240
ctcttgaagt atcagtcact tttgagaatg tttcttagtt actgcatact tcatggatcc
                                                                        300
catggtgggg gtcttgcatc tgtaagaatg gaattgattt tgcttttgca agaatctcag
                                                                        360
caggaaacat cagaaccact attttctagc cctctgtcag agcaaacctc agtgcctctc
                                                                        420
ctctttgctt gt
                                                                        432
      <210> 126
      <211> 112
      <212> DNA
      <213> Homo sapien
      <400> 126
acacaacttg aatagtaaaa tagaaactga gctgaaattt ctaattcact ttctaaccat
                                                                        60
agtaagaatg atatttcccc ccagggatca ccaaatattt ataaaaattt gt
                                                                        112
      <210> 127
      <211> 54
      <212> DNA
      <213> Homo sapien
      <400> 127
accacgaaac cacaaacaag atggaagcat caatccactt gccaagcaca qcag
                                                                        54
      <210> 128
      <211> 323
      <212> DNA
      <213> Homo sapien
      <400> 128
acctcattag taattgtttt gttgtttcat ttttttctaa tgtctcccct ctaccagctc
                                                                        60
acctgagata acagaatgaa aatggaagga cagccagatt tctcctttgc tctctgctca
                                                                       120
ttctctctga agtctaggtt acccattttg gggacccatt ataggcaata aacacagttc
                                                                       180
ccaaagcatt tggacagttt cttgttgtgt tttagaatgg ttttcctttt tcttagcctt
                                                                       240
ttcctgcaaa aggctcactc agtcccttgc ttgctcagtg gactgggctc cccagggcct
                                                                       300
aggctgcctt cttttccatg tcc
                                                                       323
      <210> 129
      <211> 192
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(192)
      \langle 223 \rangle n = A,T,C or G
```

```
<400> 129
 acatacatgt gtgtatattt ttaaatatca cttttgtatc actctgactt tttagcatac
                                                                          60
 tgaaaacaca ctaacataat ttntgtgaac catgatcaga tacaacccaa atcattcatc
                                                                         120
 tagcacattc atctgtgata naaagatagg tgagtttcat ttccttcacg ttggccaatg
                                                                         180
 gataaacaaa gt
                                                                         192
       <210> 130
       <211> 362
       <212> DNA
       <213> Homo sapien
       <220>
       <221> misc_feature
       <222> (1)...(362)
       <223> n = A,T,C or G
       <400> 130
ccctttttta tggaatgagt agactgtatg tttgaanatt tanccacaac ctctttgaca
                                                                         60
tataatgacg caacaaaaag gtgctgttta gtcctatggt tcagtttatg cccctgacaa
                                                                         120
gtttccattg tgttttgccg atcttctggc taatcgtggt atcctccatg ttattagtaa
                                                                         180
ttctgtattc cattttgtta acgcctggta gatgtaacct gctangaggc taactttata
                                                                         240
cttatttaaa agctcttatt ttgtggtcat taaaatggca atttatgtgc agcactttat
                                                                        300
tgcagcagga agcacgtgtg ggttggttgt aaagctcttt gctaatctta aaaagtaatg
                                                                        360
gg
                                                                         362
      <210> 131
      <211> 332
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1) ... (332)
      \langle 223 \rangle n = A,T,C or G
      <400> 131
ctttttgaaa gatcgtgtcc actcctgtgg acatcttgtt ttaatggagt ttcccatgca
                                                                         60
gtangactgg tatggttgca gctgtccaga taaaaacatt tgaagagctc caaaatgaga
                                                                        120
gttctcccag gttcgccctg ctgctccaag tctcagcagc agcctctttt aggaggcatc
                                                                        180
ttctgaacta gattaaggca gcttgtaaat ctgatgtgat ttggtttatt atccaactaa
                                                                        240
cttccatctg ttatcactgg agaaagccca gactccccan gacnggtacg gattgtgggc
                                                                        300
atanaaggat tgggtgaagc tggcgttgtg qt
                                                                        332
      <210> 132
      <211> 322
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(322)
      <223> n = A, T, C or G
      <400> 132
actititgcca tititgtatat ataaacaatc tigggacatt ciccigaaaa ciaggigtcc
                                                                         60
```

```
agtggctaag agaactcgat ttcaagcaat tctgaaagga aaaccagcat gacacagaat
ctcaaattcc caaacagggg ctctgtggga aaaatgaggg aggacctttg tatctcgggt
                                                                        180
tttagcaagt taaaatgaan atgacaggaa aggcttattt atcaacaaag agaagagttg
                                                                        240
ggatgcttct aaaaaaaact ttggtagaga aaataggaat gctnaatcct agggaagcct
                                                                        300
gtaacaatct acaattggtc ca
                                                                        322
      <210> 133
      <211> 278
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(278)
      \langle 223 \rangle n = A,T,C or G
      <400> 133
acaagccttc acaagtttaa ctaaattggg attaatcttt ctgtanttat ctgcataatt
                                                                         60
cttgtttttc tttccatctg gctcctgggt tgacaatttg tggaaacaac tctattgcta
                                                                        120
ctatttaaaa aaaatcacaa atctttccct ttaagctatg ttnaattcaa actattcctg
                                                                        180
ctattcctgt tttgtcaaag aaattatatt tttcaaaata tgtntatttg tttgatgggt
                                                                        240
cccacgaaac actaataaaa accacagaga ccagcctg
                                                                        278
      <210> 134
      <211> 121
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(121)
      <223> n = A,T,C or G
      <400> 134
gtttanaaaa cttgtttagc tccatagagg aaagaatgtt aaactttgta ttttaaaaca
                                                                        60
tgattctctg aggttaaact tggttttcaa atgttatttt tacttgtatt ttgcttttgg
                                                                       120
                                                                       121
      <210> 135
      <211> 350
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(350)
      <223> n = A,T,C or G
      <400> 135
acttanaacc atgcctagca catcagaatc cctcaaagaa catcagtata atcctatacc
                                                                        60
atancaagtg gtgactggtt aagcgtgcga caaaggtcag ctggcacatt acttgtgtgc
                                                                       120
aaacttgata cttttgttct aagtaggaac tagtatacag tncctaggan tggtactcca
                                                                       180
gggtgccccc caactcctgc agccgctcct ctgtgccagn ccctgnaagg aactttcgct
                                                                       240
ccacctcaat caagccctgg gccatgctac ctgcaattgg ctgaacaaac gtttgctgag
                                                                       300
ttcccaagga tgcaaagcet ggtgctcaac tcctggggcg tcaactcagt
                                                                       350
```

```
<210> 136
       <211> 399
       <212> DNA
       <213> Homo sapien
       <220>
       <221> misc_feature
       <222> (1)...(399)
       <223> n = A, T, C or G
       <400> 136
tgtaccgtga agacgacaga agttgcatgg cagggacagg gcagggccga ggccagggtt
                                                                          60
gctgtgattg tatccgaata ntcctcgtga gaaaagataa tgagatgacg tgagcagcct
                                                                         120
gcagacttgt gtctgccttc aanaagccag acaggaaggc cctgcctgcc ttggctctga
                                                                         180
cctggcggcc agccagccag ccacaggtgg gcttcttcct tttgtggtga caacnccaag
                                                                         240
aaaactgcag aggcccaggg tcaggtgtna gtgggtangt gaccataaaa caccaggtgc
                                                                         300
tcccaggaac ccgggcaaag gccatcccca cctacagcca gcatgcccac tggcgtgatg
                                                                         360
ggtgcagang gatgaagcag ccagntgttc tgctgtggt
                                                                         399
      <210> 137
      <211> 165
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(165)
      \langle 223 \rangle n = A,T,C or G
      <400> 137
actggtgtgg tngggggtga tgctggtggt anaagttgan gtgacttcan gatggtgtgt
                                                                         60
ggaggaagtg tgtgaacgta gggatgtaga ngttttggcc gtgctaaatg agcttcggga
                                                                         120
ttggctggtc ccactggtgg tcactgtcat tggtggggtt cctgt
                                                                         165
      <210> 138
      <211> 338
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(338)
      \langle 223 \rangle n = A,T,C or G
      <400> 138
actcactgga atgccacatt cacaacagaa tcagaggtct gtgaaaacat taatggctcc
                                                                         60
ttaacttctc cagtaagaat cagggacttg aaatggaaac gttaacagcc acatgcccaa
                                                                        120
tgctgggcag tctcccatgc cttccacagt gaaagggctt gagaaaaatc acatccaatg
                                                                        180
tcatgtgttt ccagccacac caaaaggtgc ttggggtgga gggctggggg catananggt
                                                                        240
cangcetcag gaageetcaa gtteeattea getttgeeac tgtacattee ecatntttaa
                                                                        300
aaaaactgat gccttttttt ttttttttt taaaattc
                                                                        338
      <210> 139
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<211> 382

```
<212> DNA
      <213> Homo sapien
      <400> 139
gggaatcttg gtttttggca tctggtttgc ctatagccga ggccactttg acagaacaaa
                                                                          60
gaaagggact tcgagtaaga aggtgattta cagccagcct agtgcccgaa gtgaaggaga
                                                                         120
attcaaacag acctcgtcat tcctggtgtg agcctggtcg gctcaccgcc tatcatctgc
                                                                         180
atttgcctta ctcaggtgct accggactct ggcccctgat gtctgtagtt tcacaggatg
                                                                         240
ccttatttgt cttctacacc ccacagggcc ccctacttct tcggatgtgt ttttaataat
                                                                         300
gtcagctatg tgccccatcc tccttcatgc cctccctccc tttcctacca ctgctgagtg
                                                                         360
gcctggaact tgtttaaagt gt
                                                                         382
      <210> 140
      <211> 200
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(200)
      <223> n = A, T, C or G
      <400> 140
accaaanctt ctttctgttg tgttngattt tactataggg gtttngcttn ttctaaanat
                                                                         60
actiticati taacanciii tgitaagigi caggotgcac titigotocat anaattatig
                                                                        120
ttttcacatt tcaacttgta tgtgtttgtc tcttanagca ttggtgaaat cacatatttt
                                                                        180
atattcagca taaaggagaa
                                                                        200
      <210> 141
      <211> 335
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1) ... (335)
      \langle 223 \rangle n = A,T,C or G
      <400> 141
actttatttt caaaacactc atatgttgca aaaaacacat agaaaaataa agtttggtgg
                                                                         60
gggtgctgac taaacttcaa gtcacagact tttatgtgac agattggagc agggtttgtt
                                                                        120
atgcatgtag agaacccaaa ctaatttatt aaacaggata gaaacaggct gtctgggtga
                                                                        180
aatggttctg agaaccatcc aattcacctg tcagatgctg atanactagc tcttcagatg
                                                                        240
tttttctacc agttcagaga tnggttaatg actanttcca atggggaaaa agcaagatgg
                                                                        300
attcacaaac caagtaattt taaacaaaga cactt
                                                                        335
      <210> 142
      <211> 459
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(459)
      \langle 223 \rangle n = A,T,C or G
```

```
<400> 142
accaggitaa tattgccaca tatatccttt ccaattgcgg gctaaacaga cgtgtattta
                                                                         60
gggttgttta aagacaaccc agcttaatat caagagaaat tgtgaccttt catggagtat
                                                                        120
ctgatggaga aaacactgag ttttgacaaa tcttatttta ttcagatagc agtctgatca
                                                                        180
cacatggtcc aacaacactc aaataataaa tcaaatatna tcagatgtta aagattggtc
                                                                        240
ttcaaacatc atagccaatg atgccccgct tgcctataat ctctccgaca taaaaccaca
                                                                        300
tcaacacctc agtggccacc aaaccattca gcacagcttc cttaactgtg agctgtttga
                                                                        360
agctaccagt ctgagcacta ttgactatnt ttttcangct ctgaatagct ctagggatct
                                                                        420
cagcangggt gggaggaacc agctcaacct tggcgtant
                                                                        459
      <210> 143
      <211> 140
      <212> DNA
      <213> Homo sapien
      <400> 143
acatttcctt ccaccaagtc aggactcctg gcttctgtgg gagttcttat cacctgaggg
                                                                        60
aaatccaaac agtctctcct agaaaggaat agtgtcacca accccaccca tctccctgag
                                                                       120
accatccgac ttccctgtgt
                                                                       140
      <210> 144
      <211> 164
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(164)
      <223> n = A,T,C or G
      <400> 144
acttcagtaa caacatacaa taacaacatt aagtgtatat tgccatcttt gtcattttct
                                                                       60
atctatacca ctctcccttc tgaaaacaan aatcactanc caatcactta tacaaatttg
                                                                       120
aggcaattaa tccatatttg ttttcaataa ggaaaaaaag atgt
                                                                       164
      <210> 145
      <211> 303
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(303)
      <223> n = A,T,C or G
      <400> 145
acgtagacca tccaactttg tatttgtaat ggcaaacatc cagnagcaat tcctaaacaa
                                                                       60
actggagggt atttataccc aattatccca ttcattaaca tgccctcctc ctcaggctat
                                                                       120
gcaggacage tateataagt eggeecagge atceagatae taceatttgt ataaaettea
                                                                       180
gtaggggagt ccatccaagt gacaggtcta atcaaaggag gaaatggaac ataagcccag
                                                                      240
tagtaaaatn ttgcttagct gaaacagcca caaaagactt accgccgtgg tgattaccat
                                                                      300
caa
                                                                      303
```

<210> 146

```
<211> 327
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(327)
      <223> n = A, T, C or G
      <400> 146
actgcagete aattagaagt ggtetetgae ttteateane tteteeetgg geteeatgae
                                                                        60
actggcctgg agtgactcat tgctctggtt ggttgagaga gctcctttgc caacaggcct
                                                                       120
ccaagtcagg gctgggattt gtttcctttc cacattctag caacaatatg ctggccactt
                                                                       180
cctgaacagg gagggtggga ggagccagca tggaacaagc tgccactttc taaaqtaqcc
                                                                       240
agacttgccc ctgggcctgt cacacctact gatgaccttc tgtgcctgca ggatggaatg
                                                                       300
taggggtgag ctgtgtgact ctatggt
                                                                       327
      <210> 147
      <211> 173
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature.
      <222> (1)...(173)
      <223> n = A,T,C or G
      <400> 147
acattgtttt tttgagataa agcattgana gagctctcct taacgtgaca caatggaagg
                                                                       60
actggaacac atacccacat ctttgttctg agggataatt ttctgataaa gtcttgctgt
                                                                       120
atattcaagc acatatgtta tatattattc agttccatgt ttatagccta gtt
                                                                       173
      <210> 148
      <211> 477
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(477)
      <223> n = A, T, C or G
      <400> 148
acaaccactt tatctcatcg aatttttaac ccaaactcac tcactgtgcc tttctatcct
                                                                       60
atgggatata ttatttgatg ctccatttca tcacacatat atgaataata cactcatact
                                                                       120
gccctactac ctgctgcaat aatcacattc ccttcctgtc ctgaccctga agccattggg
                                                                      180
gtggtcctag tggccatcag tccangcctg caccttgagc ccttgagctc cattgctcac
                                                                      240
nccancccac ctcaccgacc ccatcctctt acacagctac ctccttgctc tctaacccca
                                                                      300
tagattatnt ccaaattcag tcaattaagt tactattaac actctacccg acatgtccag
                                                                      360
caccactggt aagccttctc cagccaacac acacacacac acacncacac acacacatat
                                                                      420
ccaggcacag gctacctcat cttcacaatc acccctttaa ttaccatgct atggtgg
                                                                      477
      <210> 149
      <211> 207
      <212> DNA
```

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<213> Homo sapien <400> 149 acagttgtat tataatatca agaaataaac ttgcaatgag agcatttaag agggaagaac 60 taacgtattt tagagagcca aggaaggttt ctgtggggag tgggatgtaa ggtggggcct 120 gatgataaat aagagtcagc caggtaagtg ggtggtgtgg tatgggcaca gtgaagaaca 180 tttcaggcag agggaacagc agtgaaa 207 <210> 150 <211> 111 <212> DNA <213> Homo sapien <220> <221> misc_feature <222> (1)...(111) <223> n = A, T, C or G<400> 150 accttgattt cattgctgct ctgatggaaa cccaactatc taatttagct aaaacatggg 60 cacttaaatg tggtcagtgt ttggacttgt taactantgg catctttggg t 111 <210> 151 <211> 196 <212> DNA <213> Homo sapien <400> 151 agcgcggcag gtcatattga acattccaga tacctatcat tactcgatgc tgttgataac agcaagatgg ctttgaactc agggtcacca ccagctattg gaccttacta tgaaaaccat 60 120 ggataccaac cggaaaaccc ctatcccgca cagcccactg tggtccccac tgtctacgag 180 gtgcatccgg ctcagt 196 <210> 152 <211> 132 <212> DNA <213> Homo sapien <400> 152 acagcacttt cacatgtaag aagggagaaa ttcctaaatg taggagaaag ataacagaac 60 cttccccttt tcatctagtg gtggaaacct gatgctttat gttgacagga atagaaccag 120 gagggagttt gt 132 <210> 153 <211> 285 <212> DNA <213> Homo sapien <220> <221> misc_feature <222> (1)...(285) $\langle 223 \rangle$ n = A,T,C or G <400> 153 acaanaccca nganaggcca ctggccgtgg tgtcatggcc tccaaacatg aaagtgtcag

```
cttctgctct tatgtcctca tctgacaact ctttaccatt tttatcctcg ctcaqcagga
                                                                        120
gcacatcaat aaagtccaaa gtcttggact tggccttggc ttggaggaag tcatcaacac
                                                                        180
cotggctagt gagggtgcgg cgccgctcct ggatgacggc atctgtqaaq tcqtqcaca
                                                                       240
gtctgcaggc cctgtggaag cgccgtccac acggagtnag gaatt
                                                                       285
      <210> 154
      <211> 333
      <212> DNA
      <213> Homo sapien
      <400> 154
accacagtcc tgttgggcca gggcttcatg accctttctg tgaaaagcca tattatcacc
                                                                        60
accccaaatt tttccttaaa tatctttaac tgaaggggtc agcctcttqa ctqcaaaqac
                                                                       120
cctaagccgg ttacacagct aactcccact ggccctgatt tgtgaaattg ctgctgcctg
                                                                       180
attggcacag gagtcgaagg tgttcagctc ccctcctccg tggaacgaga ctctgatttg
                                                                       240
agtttcacaa attctcgggc cacctcgtca ttgctcctct gaaataaaat ccqqaqaatq
                                                                       300
gtcaggcctg tctcatccat atggatcttc cgg
                                                                       333
      <210> 155
      <211> 308
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(308)
      <223> n = A, T, C or G
      <400> 155
actggaaata ataaaaccca catcacagtg ttgtgtcaaa gatcatcagg gcatggatgg
                                                                        60
gaaagtgctt tgggaactgt aaagtgccta acacatgatc gatgattttt gttataatat
                                                                       120
ttgaatcacg gtgcatacaa actctcctgc ctgctcctcc tgggccccag ccccagcccc
                                                                       180
atcacagete actgetetgt teatecagge ceageatgta gtggetgatt ettettgget
                                                                       240
gcttttagcc tccanaagtt tctctgaagc caaccaaacc tctangtgta aggcatgctg
                                                                       300
gccctggt
                                                                       308
      <210> 156
      <211> 295
      <212> DNA
      <213> Homo sapien
      <400> 156
accttgctcg gtgcttggaa catattagga actcaaaata tgagatgata acagtgccta
                                                                        60
ttattgatta ctgagagaac tgttagacat ttagttgaag attttctaca caggaactga
                                                                       120
gaataggaga ttatgtttgg ccctcatatt ctctcctatc ctccttgcct cattctatgt
                                                                       180
ctaatatatt ctcaatcaaa taaggttagc ataatcagga aatcgaccaa ataccaatat
                                                                       240
aaaaccagat gtctatcctt aagattttca aatagaaaac aaattaacag actat
                                                                       295
      <210> 157
      <211> 126
      <212> DNA
      <213> Homo sapien
      <400> 157
acaagtttaa atagtgctgt cactgtgcat gtgctgaaat gtgaaatcca ccacatttct
                                                                        60
```

```
gaagagcaaa acaaattctg tcatgtaatc tctatcttgg gtcgtgggta tatctgtccc
                                                                         120
cttagt
                                                                         126
      <210> 158
      <211> 442
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(442)
      <223> n = A, T, C \text{ or } G
      <400> 158
acccactggt cttggaaaca cccatcctta atacgatgat ttttctgtcg tgtgaaaatg
                                                                          60
aanccagcag gctgccccta gtcagtcctt ccttccagag aaaaagagat ttgagaaagt
                                                                        120
gcctgggtaa ttcaccatta atttcctccc ccaaactctc tgagtcttcc cttaatattt
                                                                        180
ctggtggttc tgaccaaagc aggtcatggt ttgttgagca tttgggatcc cagtgaagta
                                                                        240
natgtttgta gccttgcata cttagccctt cccacgcaca aacggagtgg cagagtggtg
                                                                        300
ccaaccetgt tttcccagtc cacgtagaca gattcacagt gcggaattct ggaagctgga
                                                                        360
nacagacggg ctctttgcag agccgggact ctgagangga catgagggcc tctgcctctg
                                                                        420
tgttcattct ctgatqtcct qt
                                                                        442
      <210> 159
      <211> 498
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(498)
      \langle 223 \rangle n = A,T,C or G
      <400> 159
acttccaggt aacgttgttg tttccgttga gcctgaactg atgggtgacg ttgtaggttc
                                                                         60
tccaacaaga actgaggttg cagagcgggt agggaagagt gctgttccag ttgcacctgg
                                                                        120
gctgctgtgg actgttgttg attcctcact acggcccaag gttgtggaac tggcanaaag
                                                                        180
gtgtgttgtt gganttgagc tcgggcggct gtggtaggtt gtgggctctt caacaggggc
                                                                        240
tgctgtggtg ccgggangtg aangtgttgt gtcacttgag cttggccagc tctggaaagt
                                                                        300
antanattet teetgaagge cagegettgt ggagetggea ngggteantg ttgtgtgtaa
                                                                        360
cgaaccagtg ctgctgtggg tgggtgtana tcctccacaa agcctgaagt tatggtgtcn
                                                                        420
tcaggtaana atgtggtttc agtgtccctg ggcngctgtg gaaggttgta nattgtcacc
                                                                        480
aagggaataa gctgtggt
                                                                        498
      <210> 160
      <211> 380
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(380)
      <223> n = A,T,C or G
      <400> 160
```

```
acctgcatcc agcttccctg ccaaactcac aaggagacat caacctctag acagggaaac
                                                                         60
agcttcagga tacttccagg agacagagcc accagcagca aaacaaatat tcccatgcct
                                                                        120
ggagcatggc atagaggaag ctganaaatg tggggtctga ggaagccatt tgagtctggc
                                                                        180
cactagacat ctcatcagcc acttgtgtga agagatgccc catgacccca gatgcctctc
                                                                        240
ccacccttac ctccatctca cacacttgag ctttccactc tgtataattc taacatcctg
                                                                        300
gagaaaaatg gcagtttgac cgaacctgtt cacaacggta gaggctgatt tctaacgaaa
                                                                        360
cttgtagaat gaagcctgga
                                                                        380
      <210> 161
      <211> 114
      <212> DNA
      <213> Homo sapien
      <400> 161
actocacato coctotgago aggoggitgi ogitcaaggi gialtiggoo tigootgica
                                                                        60
cactgtccac tggcccctta tccacttggt gcttaatccc tcgaaagagc atgt
                                                                       114
      <210> 162
      <211> 177
      <212> DNA
      <213> Homo sapien
      <400> 162
actttctgaa tcgaatcaaa tgatacttag tgtagtttta atatcctcat atatatcaaa
                                                                        60
gttttactac tctgataatt ttgtaaacca ggtaaccaga acatccagtc atacagcttt
                                                                      120
tggtgatata taacttggca ataacccagt ctggtgatac ataaaactac tcactgt
                                                                       177
      <210> 163
      <211> 137
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(137)
      <223> n = A,T,C or G
      <400> 163
catttataca gacaggcgtg aagacattca cgacaaaaac gcgaaattct atcccgtgac
                                                                        60
canagaagge agetacgget actectacat cetggegtgg gtggeetteg cetgeacett
                                                                       120
catcagcggc atgatgt
                                                                       137
      <210> 164
      <211> 469
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(469)
      \langle 223 \rangle n = A,T,C or G
      <400> 164
cttatcacaa tgaatgttct cctgggcagc gttgtgatct ttgccacctt cgtgacttta
                                                                        60
tgcaatgcat catgctattt catacctaat gagggagttc caggagattc aaccaggaaa
                                                                       120
```

```
tgcatggatc tcaaaggaaa caaacaccca ataaactcgg agtggcagac tgacaactgt
                                                                         180
gagacatgca cttgctacga aacagaaatt tcatgttgca cccttgtttc tacacctgtg
                                                                         240
ggttatgaca aagacaactg ccaaagaatc ttcaagaagg aggactgcaa gtatatcgtg
                                                                         300
gtggagaaga aggacccaaa aaagacctgt tctgtcagtg aatggataat ctaatgtgct
                                                                         360
tctagtaggc acagggctcc caggccaggc ctcattctcc tctggcctct aatagtcaat
                                                                         420
gattgtgtag ccatgcctat cagtaaaaag atntttgagc aaacacttt
                                                                         469
       <210> 165
       <211> 195
       <212> DNA
       <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(195)
      \langle 223 \rangle n = A,T,C or G
      <400> 165
acagtttttt atanatatcg acattgccgg cacttgtgtt cagtttcata aagctggtgg
                                                                         60
atccgctgtc atccactatt ccttggctag agtaaaaatt attcttatag cccatgtccc
                                                                        120
tgcaggccgc ccgcccgtag ttctcgttcc agtcgtcttg gcacacaggg tgccaggact
                                                                        180
tcctctgaga tgagt
                                                                        195
      <210> 166
      <211> 383
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(383)
      <223> n = A,T,C \text{ or } G
      <400> 166
acatettagt agtgtggcae atcaggggge cateagggte acagteacte atageetege
                                                                         60
cgaggtcgga gtccacacca ccggtgtagg tgtgctcaat cttgggcttg gcgcccacct
                                                                        120
ttggagaagg gatatgctgc acacacatgt ccacaaagcc tgtgaactcg ccaaagaatt
                                                                        180
tttgcagacc agcctgagca aggggcggat gttcagcttc agctcctcct tcgtcaggtg
                                                                        240
gatgccaacc tcgtctangg tccgtgggaa gctggtgtcc acntcaccta caacctgggc
                                                                        300
gangatetta taaagagget eenagataaa eteeacgaaa ettetetggg agetgetagt
                                                                        360
nggggccttt ttggtgaact ttc
                                                                        383
      <210> 167
      <211> 247
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(247)
      <223> n = A,T,C or G
      <400> 167
acagagccag accttggcca taaatgaanc agagattaag actaaacccc aagtcganat
                                                                        60
tggagcagaa actggagcaa gaagtgggcc tggggctgaa gtagagacca aggccactgc
                                                                       120
```

```
tatanccata cacagagcca actctcaggc caaggcnatg gttggggcag anccagagac
                                                                        180
tcaatctgan tccaaagtgg tggctggaac actggtcatg acanaggcag tgactctgac
                                                                        240
tgangtc
                                                                        247
      <210> 168
      <211> 273
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(273)
      <223> n = A,T,C or G
      <400> 168
acttctaagt tttctagaag tggaaggatt gtantcatcc tgaaaatggg tttacttcaa
                                                                        60
aatccctcan ccttgttctt cacnactgtc tatactgana gtgtcatgtt tccacaaagg
                                                                       120
gctgacacct gagcctgnat tttcactcat ccctgagaag ccctttccag tagggtgggc
                                                                       180
aatteccaae tteettgeca caagetteee aggetttete eeetggaaaa eteeagettg
                                                                       240
agtcccagat acactcatgg gctgccctgg gca
                                                                       273
      <210> 169
      <211> 431
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(431)
      <223> n = A, T, C or G
      <400> 169
acageettgg ettecceaaa etceaeagte teagtgeaga aagateatet teeageagte
                                                                        60
agctcagacc agggtcaaag gatgtgacat caacagtttc tggtttcaga acaggttcta
                                                                       120
ctactgtcaa atgaccccc atacttcctc aaaggctgtg gtaagttttg cacaggtgag
                                                                       180
ggcagcagaa agggggtant tactgatgga caccatcttc tctgtatact ccacactgac
                                                                       240
cttgccatgg gcaaaggccc ctaccacaaa aacaatagga tcactgctgg gcaccagctc
                                                                       300
acgcacatca ctgacaaccg ggatggaaaa agaantgcca actttcatac atccaactgg
                                                                       360
aaagtgatct gatactggat tcttaattac cttcaaaagc ttctgggggc catcagctgc
                                                                       420
tcgaacactg a
                                                                       431
      <210> 170
      <211> 266
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(266)
      <223> n = A,T,C or G
      <400> 170
acctgtgggc tgggctgtta tgcctgtgcc ggctgctgaa agggagttca gaggtggagc
                                                                        60
tcaaggagct ctgcaggcat tttgccaanc ctctccanag canagggagc aacctacact
                                                                       120
ccccgctaga aagacaccag attggagtcc tgggaggggg agttggggtg ggcatttgat
                                                                       180
```

```
gtatacttgt cacctgaatg aangagccag agaggaanga gacgaanatg anattggcct
                                                                      240
tcaaagctag gggtctggca ggtgga
                                                                      266
      <210> 171
      <211> 1248
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(1248)
      <223> n = A, T, C or G
      <400> 171
ggcagccaaa tcataaacgg cgaggactgc agcccgcact cgcagccctg gcaggcggca
                                                                      60
ctggtcatgg aaaacgaatt gttctgctcg ggcgtcctgg tgcatccgca gtgggtgctg
                                                                      120
tcagccgcac actgtttcca gaagtgagtg cagagctcct acaccatcgg gctgggcctg
                                                                      180
cacagtettg aggeegaeea agageeaggg ageeagatgg tggaggeeag eeteteegta
                                                                      240
cggcacccag agtacaacag accettgete getaacgace teatgeteat caagttggae
                                                                     300
gaatccgtgt ccgagtctga caccatccgg agcatcagca ttgcttcgca gtgccctacc
                                                                     360
gcggggaact cttgcctcgt ttctggctgg ggtctgctgg cgaacggcag aatgcctacc
                                                                     420
gtgctgcagt gcgtgaacgt gtcggtggtg tctgaggagg tctgcagtaa gctctatgac
                                                                     480
ccgctgtacc accccagcat gttctgcgcc ggcggagggc aagaccagaa ggactcctgc
                                                                     540
aacggtgact ctggggggcc cctgatctgc aacgggtact tgcagggcct tgtgtctttc
                                                                     600
ggaaaagccc cgtgtggcca agttggcgtg ccaggtgtct acaccaacct ctgcaaattc
                                                                     660
actgagtgga tagagaaaac cgtccaggcc agttaactct ggggactggg aacccatgaa
                                                                     720
attgaccccc aaatacatcc tgcggaagga attcaggaat atctgttccc agcccctcct
                                                                     780
ccctcaggcc caggagtcca ggcccccagc ccctcctccc tcaaaccaag ggtacagatc
                                                                     840
cccagcccct cctccctcag acccaggagt ccagacccc cagcccctcc tccctcagac
                                                                     900
ccaggagtec ageceetect eceteagace caggagteca gaeceeceag eceetectee
                                                                     960
ctcagaccca ggggtccagg cccccaaccc ctcctccctc agactcagag gtccaagccc
                                                                    1020
ccaaccente attecceaga cccagaggte caggteccag cccetentee etcagaccea
                                                                    1080
geggteeaat gecaectaga etntecetgt acacagtgee ceettgtgge acgttgaece
                                                                    1140
aaccttacca gttggttttt catttttngt ccctttcccc tagatccaga aataaagttt
                                                                    1200
1248
      <210> 172
      <211> 159
      <212> PRT
      <213> Homo sapien
      <220>
      <221> VARIANT
      <222> (1)...(159)
      <223> Xaa = Any Amino Acid
      <400> 172
Met Val Glu Ala Ser Leu Ser Val Arg His Pro Glu Tyr Asn Arg Pro
                                   10
Leu Leu Ala Asn Asp Leu Met Leu Ile Lys Leu Asp Glu Ser Val Ser
            20
Glu Ser Asp Thr Ile Arg Ser Ile Ser Ile Ala Ser Gln Cys Pro Thr
Ala Gly Asn Ser Cys Leu Val Ser Gly Trp Gly Leu Leu Ala Asn Gly
                       55
```

```
Arg Met Pro Thr Val Leu Gln Cys Val Asn Val Ser Val Val Ser Glu
                    70
                                         75
Glu Val Cys Ser Lys Leu Tyr Asp Pro Leu Tyr His Pro Ser Met Phe
Cys Ala Gly Gly Gln Xaa Gln Xaa Asp Ser Cys Asn Gly Asp Ser
                                 105
Gly Gly Pro Leu Ile Cys Asn Gly Tyr Leu Gln Gly Leu Val Ser Phe
                            120
                                                 125
Gly Lys Ala Pro Cys Gly Gln Val Gly Val Pro Gly Val Tyr Thr Asn
                        135
                                             140
Leu Cys Lys Phe Thr Glu Trp Ile Glu Lys Thr Val Gln Ala Ser
                    150
                                         155
      <210> 173
      <211> 1265
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(1265)
      <223> n = A, T, C or G
      <400> 173
ggcagcccgc actcgcagcc ctggcaggcg gcactggtca tggaaaacga attgttctgc
                                                                        60
tegggegtee tggtgcatee geagtgggtg etgteageeg caeactgttt ecagaactee
                                                                       120
tacaccatcg ggctgggcct gcacagtctt gaggccgacc aagagccagg gagccagatg
                                                                       180
gtggaggcca gcctctccgt acggcaccca gagtacaaca gacccttgct cgctaacgac
                                                                       240
ctcatgctca tcaagttgga cgaatccgtg tccgagtctg acaccatccg gagcatcagc
                                                                       300
attgcttcgc agtgccctac cgcggggaac tcttgcctcg tttctggctg gggtctqctq
                                                                       360
gcgaacggtg agctcacggg tgtgtgtctg ccctcttcaa ggaggtcctc tgcccagtcg
                                                                       420
cgggggctga cccagagctc tgcgtcccag gcagaatgcc taccgtgctg cagtgcgtga
                                                                       480
acgtgtcggt ggtgtctgag gaggtctgca gtaagctcta tgacccgctq taccaccca
                                                                       540
gcatgttctg cgccggcgga gggcaagacc agaaggactc ctgcaacggt gactctgggg
                                                                      600
ggcccctgat ctgcaacggg tacttgcagg gccttgtgtc tttcggaaaa gccccgtgtg
                                                                      660
gccaagttgg cgtgccaggt gtctacacca acctctgcaa attcactgag tggatagaga
                                                                      720
aaaccgtcca ggccagttaa ctctggggac tgggaaccca tgaaattgac ccccaaatac
                                                                      780
atcctgcgga aggaattcag gaatatctgt tcccagcccc tcctcctca ggcccaggag
                                                                      840
tecaggeece cageecetee teceteaaac caagggtaca gateeceage eceteetee
                                                                      900
tcagacccag gagtccagac cccccagccc ctcctccctc agacccagga gtccagccc
                                                                      960
tecteentca gacceaggag tecagaceee ecageeeete eteceteaga eccaggggtt
                                                                     1020
gaggececca acceetecte etteagagte agaggtecaa gececeaace ectegtteee
                                                                     1080
cagacccaga ggtnnaggtc ccagcccctc ttccntcaga cccagnggtc caatgccacc
                                                                     1140
tagattttcc ctgnacacag tgcccccttg tggnangttg acccaacctt accagttgqt
                                                                     1200
ttttcatttt tngtcccttt cccctagatc cagaaataaa gtttaagaga ngngcaaaaa
                                                                     1260
aaaaa
                                                                     1265
      <210> 174
      <211> 1459
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(1459)
```

```
<223> n = A,T,C or G
```

<400> 174 ggtcagccgc acactgtttc cagaagtgag tgcagagctc ctacaccatc gggctgggcc 60 tgcacagtct tgaggccgac caagagccag ggagccagat ggtggaggcc agcctctccg 120 tacggcaccc agagtacaac agacccttgc tcgctaacga cctcatgctc atcaagttgg 180 acgaatccgt gtccgagtct gacaccatcc ggagcatcag cattgcttcg cagtgcccta 240 ccgcggggaa ctcttgcctc gtttctggct ggggtctgct ggcgaacggt gagctcacgg 300 gtgtgtgtct gccctcttca aggaggtcct ctgcccagtc gcgggggctg acccagagct 360 ctgcgtccca ggcagaatgc ctaccgtgct gcagtgcgtg aacgtgtcgg tggtgtctga 420 ngaggtctgc antaagctct atgacccgct gtaccacccc ancatgttct gcgccggcgg 480 agggcaagac cagaaggact cctgcaacgt gagagaggg aaaggggagg gcaggcgact 540 cagggaaggg tggagaaggg ggagacagag acacacaggg ccgcatggcg agatgcagag 600 atggagagac acacagggag acagtgacaa ctagagagag aaactgagag aaacagagaa 660 ataaacacag gaataaagag aagcaaagga agagagaaac agaaacagac atggggaggc 720 agaaacacac acacatagaa atgcagttga ccttccaaca gcatggggcc tgagggcggt 780 gacctccacc caatagaaaa tcctcttata acttttgact ccccaaaaac ctgactagaa 840 atagcctact gttgacgggg agccttacca ataacataaa tagtcgattt atgcatacgt 900 tttatgcatt catgatatac ctttgttgga attttttgat atttctaagc tacacagttc 960 gtctgtgaat ttttttaaat tgttgcaact ctcctaaaat ttttctgatg tgtttattga 1020 aaaaatccaa gtataagtgg acttgtgcat tcaaaccagg gttgttcaag ggtcaactgt 1080 gtacccagag ggaaacagtg acacagattc atagaggtga aacacgaaga gaaacaggaa 1140 aaatcaagac tctacaaaga ggctgggcag ggtggctcat gcctgtaatc ccagcacttt 1200 gggaggcgag gcaggcagat cacttgaggt aaggagttca agaccagcct ggccaaaatg 1260 gtgaaatcct gtctgtacta aaaatacaaa agttagctgg atatggtggc aggcgcctgt 1320 aatcccagct acttgggagg ctgaggcagg agaattgctt gaatatggga ggcagaggtt 1380 gaagtgagtt gagatcacac cactatactc cagctggggc aacagagtaa gactctgtct 1440 Caaaaaaaa aaaaaaaaa 1459 <210> 175 <211> 1167 <212> DNA <213> Homo sapien

<220>

<221> misc feature

<222> (1) ... (1167)

<223> n = A,T,C or G

<400> 175

gcgcagccct ggcaggcggc actggtcatg gaaaacgaat tgttctgctc gggcgtcctg 60 gtgcatccgc agtgggtgct gtcagccgca cactgtttcc agaactccta caccatcggg 120 ctgggcctgc acagtcttga ggccgaccaa gagccaggga gccagatggt ggaggccagc 180 ctctccgtac ggcacccaga gtacaacaga ctcttgctcg ctaacgacct catgctcatc 240 aagttggacg aatccgtgtc cgagtctgac accatccgga gcatcagcat tgcttcgcag 300 tgccctaccg cggggaactc ttgcctcgtn tctggctggg gtctgctggc gaacggcaga 360 atgcctaccg tgctgcactg cgtgaacgtg tcggtggtgt ctgaggangt ctgcagtaag 420 ctctatgacc cgctgtacca ccccagcatg ttctgcgccg gcggagggca agaccagaag 480 gacteetgea aeggtgaete tggggggeee etgatetgea aegggtaett geagggeett 540 gtgtctttcg gaaaagcccc gtgtggccaa cttggcgtgc caggtgtcta caccaacctc 600 tgcaaattca ctgagtggat agagaaaacc gtccagncca gttaactctg gggactggga 660 acccatgaaa ttgaccccca aatacatcct gcggaangaa ttcaggaata tctgttccca 720 gcccctcctc cctcaggccc aggagtccag gcccccagcc cctcctccct caaaccaagg 780 gtacagatee ecageceete eteceteaga eccaggagte cagacecece ageceetent 840 centeagace caggagteca geceetecte enteagacge aggagtecag acceecage 900

```
cententeeg teagaceeag gggtgeagge ecceaacee tenteentea gagteagagg
                                                                       960
tecaageece caaceeteg ttececagae ceagaggine aggicecage ceetecteec
                                                                      1020
tcagacccag cggtccaatg ccacctagan tntccctgta cacagtgccc ccttgtggca
                                                                      1080
ngttgaccca accttaccag ttggtttttc attttttgtc cctttcccct agatccagaa
                                                                      1140
ataaagtnta agagaagcgc aaaaaaa
                                                                      1167
      <210> 176
      <211> 205
      <212> PRT
      <213> Homo sapien
      <220>
      <221> VARIANT
      <222> (1)...(205)
      <223> Xaa = Any Amino Acid
      <400> 176
Met Glu Asn Glu Leu Phe Cys Ser Gly Val Leu Val His Pro Gln Trp
                                    10
Val Leu Ser Ala Ala His Cys Phe Gln Asn Ser Tyr Thr Ile Gly Leu
                                25
Gly Leu His Ser Leu Glu Ala Asp Gln Glu Pro Gly Ser Gln Met Val
                            40
Glu Ala Ser Leu Ser Val Arg His Pro Glu Tyr Asn Arg Leu Leu
                        55
Ala Asn Asp Leu Met Leu Ile Lys Leu Asp Glu Ser Val Ser Glu Ser
                    70
                                        75
Asp Thr Ile Arg Ser Ile Ser Ile Ala Ser Gln Cys Pro Thr Ala Gly
Asn Ser Cys Leu Val Ser Gly Trp Gly Leu Leu Ala Asn Gly Arg Met
                                105
Pro Thr Val Leu His Cys Val Asn Val Ser Val Val Ser Glu Xaa Val
                            120
Cys Ser Lys Leu Tyr Asp Pro Leu Tyr His Pro Ser Met Phe Cys Ala
                        135
                                            140
Gly Gly Gln Asp Gln Lys Asp Ser Cys Asn Gly Asp Ser Gly Gly
                    150
                                        155
Pro Leu Ile Cys Asn Gly Tyr Leu Gln Gly Leu Val Ser Phe Gly Lys
                                    170
Ala Pro Cys Gly Gln Leu Gly Val Pro Gly Val Tyr Thr Asn Leu Cys
            180
                                185
Lys Phe Thr Glu Trp Ile Glu Lys Thr Val Gln Xaa Ser
        195
      <210> 177
      <211> 1119
      <212> DNA
      <213> Homo sapien
      <400> 177
gcgcactcgc agccctggca ggcggcactg gtcatggaaa acgaattgtt ctgctcgggc
                                                                       60
gtcctggtgc atccgcagtg ggtgctgtca gccgcacact gtttccagaa ctcctacacc
                                                                      120
atcgggctgg gcctgcacag tcttgaggcc gaccaagagc cagggagcca gatggtggag
                                                                      180
gccagcctct ccgtacggca cccagagtac aacagaccct tgctcgctaa cgacctcatg
                                                                      240
ctcatcaagt tggacgaatc cgtgtccgag tctgacacca tccggagcat cagcattgct
                                                                      300
```

420

480

540

600

660

720

780

840

900

960

1020

1080

1119

```
tegeagtgee ctacegeggg gaactettge etegtttetg getggggtet getggegaac
gatgctgtga ttgccatcca gtcccagact gtgggaggct gggagtgtga gaagctttcc
caaccetgge agggttgtac cattteggea acttecagtg caaggacgte etgetgeate
ctcactgggt gctcactact gctcactgca tcacccggaa cactgtgatc aactagccag
caccatagtt ctccgaagtc agactatcat gattactgtg ttgactgtgc tgtctattgt
actaaccatg ccgatgttta ggtgaaatta gcgtcacttg gcctcaacca tcttggtatc
cagttatect caetgaattg agattteetg etteagtgte agecatteee acataattte
tgacctacag aggtgaggga tcatatagct cttcaaggat gctggtactc ccctcacaaa
ttcatttctc ctgttgtagt gaaaggtgcg ccctctggag cctcccaggg tgggtgtgca
ggtcacaatg atgaatgtat gatcgtgttc ccattaccca aagcctttaa atccctcatg
ctcagtacac cagggcaggt ctagcatttc ttcatttagt gtatgctgtc cattcatgca
accacctcag gactcctgga ttctctgcct agttgagctc ctgcatgctg cctccttggg
gaggtgaggg agagggccca tggttcaatg ggatctgtgc agttgtaaca cattaggtgc
ttaataaaca gaagctgtga tgttaaaaaa aaaaaaaaa
      <210> 178
      <211> 164
      <212> PRT
      <213> Homo sapien
      <220>
      <221> VARIANT
      <222> (1)...(164)
      <223> Xaa = Any Amino Acid
      <400> 178
Met Glu Asn Glu Leu Phe Cys Ser Gly Val Leu Val His Pro Gln Trp
                                    10
Val Leu Ser Ala Ala His Cys Phe Gln Asn Ser Tyr Thr Ile Gly Leu
                                25
Gly Leu His Ser Leu Glu Ala Asp Gln Glu Pro Gly Ser Gln Met Val
                            40
Glu Ala Ser Leu Ser Val Arg His Pro Glu Tyr Asn Arg Pro Leu Leu
Ala Asn Asp Leu Met Leu Ile Lys Leu Asp Glu Ser Val Ser Glu Ser
                    70
                                        75
Asp Thr Ile Arg Ser Ile Ser Ile Ala Ser Gln Cys Pro Thr Ala Gly
                                    90
Asn Ser Cys Leu Val Ser Gly Trp Gly Leu Leu Ala Asn Asp Ala Val
                                105
Ile Ala Ile Gln Ser Xaa Thr Val Gly Gly Trp Glu Cys Glu Lys Leu
                            120
                                                125
Ser Gln Pro Trp Gln Gly Cys Thr Ile Ser Ala Thr Ser Ser Ala Arg
                        135
Thr Ser Cys Cys Ile Leu Thr Gly Cys Ser Leu Leu Leu Thr Ala Ser
                    150
                                        155
                                                            160
Pro Gly Thr Leu
      <210> 179
      <211> 250
      <212> DNA
      <213> Homo sapien
```

<400> 179

```
ctggagtgcc ttggtgtttc aagcccctgc aggaagcaga atgcaccttc tgaggcacct
                                                                         60
ccagctgccc ccggccgggg gatgcgaggc tcggagcacc cttgcccggc tgtgattgct
                                                                        120
gccaggcact gttcatctca gcttttctgt ccctttgctc ccggcaagcg cttctgctga
                                                                        180
aagttcatat ctggagcctg atgtcttaac gaataaaggt cccatgctcc acccgaaaaa
                                                                        240
aaaaaaaaa
                                                                        250
      <210> 180
      <211> 202
      <212> DNA
      <213> Homo sapien
      <400> 180
actagtccag tgtggtggaa ttccattgtg ttgggcccaa cacaatggct acctttaaca
                                                                        60
tcacccagac cccgcccctg cccgtgcccc acgctgctgc taacgacagt atqatqctta
                                                                       120
ctctgctact cggaaactat ttttatgtaa ttaatgtatg ctttcttgtt tataaatgcc
                                                                       180
tgatttaaaa aaaaaaaaa aa
                                                                       202
      <210> 181
      <211> 558
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(558)
      <223> n = A, T, C or G
      <400> 181
tccytttgkt naggtttkkg agacamccck agacctwaan ctgtgtcaca gacttcyngg
                                                                        60
aatgtttagg cagtgctagt aatttcytcg taatgattct gttattactt tcctnattct
                                                                       120
ttattcctct ttcttctgaa gattaatgaa gttgaaaatt gaggtggata aatacaaaaa
                                                                       180
ggtagtgtga tagtataagt atctaagtgc agatgaaagt gtgttatata tatccattca
                                                                       240
aaattatgca agttagtaat tactcagggt taactaaatt actttaatat gctgttgaac
                                                                       300
ctactctgtt ccttggctag aaaaaattat aaacaggact ttgttagttt gggaagccaa
                                                                       360
attgataata ttctatgttc taaaagttgg gctatacata aattattaag aaatatggaw
                                                                       420
ttttattccc aggaatatgg kgttcatttt atgaatatta cscrggatag awqtwtqaqt
                                                                       480
aaaaycagtt ttggtwaata ygtwaatatg tcmtaaataa acaakgcttt gacttatttc
                                                                       540
caaaaaaaa aaaaaaaa
                                                                       558
      <210> 182
      <211> 479
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(479)
      <223> n = A,T,C or G
      <400> 182
acagggwttk grggatgcta agsccccrga rwtygtttga tccaaccctg gcttwttttc
                                                                       60
agaggggaaa atggggccta gaagttacag mscatytagy tggtgcgmtg gcacccctqq
                                                                       120
cstcacacag astcccgagt agctgggact acaggcacac agtcactgaa gcaggccctg
                                                                       180
ttwgcaattc acgttgccac ctccaactta aacattcttc atatgtgatg tccttagtca
                                                                      240
ctaaggttaa actttcccac ccagaaaagg caacttagat aaaatcttag agtactttca
                                                                      300
```

```
tactmttcta agtcctcttc cagcctcact kkgagtcctm cytgggggtt gataggaant
                                                                        360
ntctcttggc tttctcaata aartctctat ycatctcatg tttaatttgg tacgcatara
                                                                        420
awtgstgara aaattaaaat gttctggtty mactttaaaa araaaaaaaa aaaaaaaaa
                                                                        479
       <210> 183
      <211> 384
      <212> DNA
      <213> Homo sapien
      <400> 183
aggegggage agaagetaaa gecaaageee aagaagagtg geagtgeeag caetggtgee
                                                                         60
agtaccagta ccaataacag tgccagtgcc agtgccagca ccagtggtgg cttcagtgct
                                                                        120
ggtgccagcc tgaccgccac tctcacattt gggctcttcg ctggccttgg tggagctggt
                                                                        180
gccagcacca gtggcagctc tggtgcctgt ggtttctcct acaagtgaga ttttagatat
                                                                       240
tgttaatcct gccagtcttt ctcttcaagc cagggtgcat cctcagaaac ctactcaaca
                                                                       300
cagcactcta ggcagccact atcaatcaat tgaagttgac actctgcatt aratctattt
                                                                       360
gccatttcaa aaaaaaaaaa aaaa
                                                                       384
      <210> 184
      <211> 496
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(496)
      <223> n = A, T, C or G
      <400> 184
accgaattgg gaccgctggc ttataagcga tcatgtyynt ccrgtatkac ctcaacgagc
                                                                        60
agggagatcg agtctatacg ctgaagaaat ttgacccgat gggacaacag acctgctcag
                                                                       120
cccatcctgc tcggttctcc ccagatgaca aatactctsg acaccgaatc accatcaaga
                                                                       180
aacgcttcaa ggtgctcatg acccagcaac cgcgccctgt cctctgaggg tcccttaaac
                                                                       240
tgatgtcttt tctgccacct gttacccctc ggagactccg taaccaaact cttcggactg
                                                                       300
tgagccctga tgcctttttg ccagccatac tctttggcat ccagtctctc gtggcgattg
                                                                       360
attatgcttg tgtgaggcaa tcatggtggc atcacccata aagggaacac atttgacttt
                                                                       420
tttttctcat attttaaatt actacmagaw tattwmagaw waaatgawtt gaaaaactst
                                                                       480
taaaaaaaa aaaaaa
                                                                       496
      <210> 185
      <211> 384
      <212> DNA
      <213> Homo sapien
      <400> 185
gctggtagcc tatggcgkgg cccacggagg ggctcctgag gccacggrac agtgacttcc
                                                                       60
caagtatcyt gegesgegte ttetacegte ectacetgea gatetteggg cagatteece
                                                                       120
aggaggacat ggacgtggcc ctcatggagc acagcaactg ytcgtcggag cccggcttct
                                                                       180
gggcacaccc tcctggggcc caggcgggca cctgcgtctc ccagtatgcc aactggctgg
                                                                       240
tggtgctgct cctcgtcatc ttcctgctcg tggccaacat cctgctggtc aacttgctca
                                                                       300
ttgccatgtt cagttacaca ttcggcaaag tacagggcaa cagcgatctc tactgggaag
                                                                       360
gcgcagcgtt accgcctcat ccgg
                                                                       384
      <210> 186
```

<211> 577

```
<212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(577)
      <223> n = A,T,C \text{ or } G
      <400> 186
gagttagete etceacaace ttgatgaggt egtetgeagt ggeetetege tteatacege
                                                                         60
tnccatcgtc atactgtagg tttgccacca cytcctggca tcttggggcg gcntaatatt
                                                                        120
ccaggaaact ctcaatcaag tcaccgtcga tgaaacctgt gggctggttc tgtcttccqc
                                                                        180
tcggtgtgaa aggatctccc agaaggagtg ctcgatcttc cccacacttt tgatgacttt
                                                                        240
attgagtcga ttctgcatgt ccagcaggag gttgtaccag ctctctgaca gtgaggtcac
                                                                        300
cagecetate atgeegttga megtgeegaa gareacegag eettgtgtgg gggkkgaagt
                                                                        360
ctcacccaga ttctgcatta ccagagagcc gtggcaaaag acattgacaa actcgcccag
                                                                        420
gtggaaaaag amcamctcct ggargtgctn gccgctcctc gtcmgttggt ggcagcgctw
                                                                        480
tccttttgac acacaaacaa gttaaaggca ttttcagccc ccagaaantt gtcatcatcc
                                                                        540
aagatntcgc acagcactna tccagttggg attaaat
                                                                        577
      <210> 187
      <211> 534
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(534)
      <223> n = A,T,C or G
      <400> 187
aacatcttcc tgtataatgc tgtgtaatat cgatccgatn ttgtctgstg agaatycatw
                                                                        60
actkggaaaa gmaacattaa agcctggaca ctggtattaa aattcacaat atqcaacact
                                                                       120
ttaaacagtg tgtcaatctg ctcccyynac tttgtcatca ccagtctggg aakaagggta
                                                                       180
tgccctattc acacctgtta aaagggcgct aagcattttt gattcaacat ctttttttt
                                                                       240
gacacaagtc cgaaaaaagc aaaagtaaac agttatyaat ttgttagcca attcactttc
                                                                       300
ttcatgggac agagccatyt gatttaaaaa gcaaattgca taatattgag cttygggagc
                                                                       360
tgatatttga gcggaagagt agcctttcta cttcaccaga cacaactccc tttcatattg
                                                                       420
ggatgttnac naaagtwatg tctctwacag atgggatgct tttgtggcaa ttctgttctg
                                                                       480
aggatetece agtttattta ceaettgeae aagaaggegt tttetteete agge
                                                                       534
      <210> 188
      <211> 761
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(761)
      <223> n = A, T, C or G
      <400> 188
agaaaccagt atctctnaaa acaacctctc ataccttgtg gacctaattt tgtgtgcgtg
                                                                        60
tgtgtgtgcg cgcatattat atagacaggc acatcttttt tacttttgta aaagcttatg
                                                                       120
cctctttggt atctatatct gtgaaagttt taatgatctg ccataatgtc ttggggacct
                                                                       180
```

```
ttgtcttctg tgtaaatggt actagagaaa acacctatnt tatgagtcaa tctagttngt
                                                                        240
tttattcgac atgaaggaaa tttccagatn acaacactna caaactctcc ctkgackarg
                                                                        300
ggggacaaag aaaagcaaaa ctgamcataa raaacaatwa cctggtgaga arttgcataa
                                                                        360
acagaaatwr ggtagtatat tgaarnacag catcattaaa rmgttwtktt wttctccctt
                                                                        420
gcaaaaaaca tgtacngact tcccgttgag taatgccaag ttgtttttt tatnataaaa
                                                                        480
cttgcccttc attacatgtt tnaaagtggt gtggtgggcc aaaatattga aatgatggaa
                                                                        540
ctgactgata aagctgtaca aataagcagt gtgcctaaca agcaacacag taatgttgac
                                                                        600
atgettaatt cacaaatget aattteatta taaatgtttg etaaaataca etttgaacta
                                                                        660
tttttctgtn ttcccagagc tgagatntta gattttatgt agtatnaagt gaaaaantac
                                                                        720
gaaaataata acattgaaga aaaananaaa aaanaaaaaa a
                                                                        761
      <210> 189
      <211> 482
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(482)
      <223> n = A,T,C or G
      <400> 189
ttttttttt tttgccgatn ctactatttt attgcaggan gtgggggtgt atgcaccgca
                                                                        60
caccggggct atnagaagca agaaggaagg agggagggca cagcccttg ctgagcaaca
                                                                       120
aagccgcctg ctgccttctc tgtctgtctc ctggtgcagg cacatgggga gaccttcccc
                                                                       180
aaggcagggg ccaccagtcc aggggtggga atacaggggg tgggangtgt gcataagaag
                                                                       240
tgataggcac aggccacccg gtacagaccc ctcggctcct gacaggtnga tttcgaccag
                                                                       300
gtcattgtgc cctgcccagg cacagcgtan atctggaaaa gacagaatgc tttccttttc
                                                                       360
aaatttggct ngtcatngaa ngggcanttt tccaanttng gctnggtctt ggtacncttg
                                                                       420
gttcggccca gctccncgtc caaaaantat tcacccnnct ccnaattgct tgcnggnccc
                                                                       480
CC
                                                                       482
      <210> 190
      <211> 471
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(471)
      \langle 223 \rangle n = A,T,C or G
      <400> 190
tttttttttt ttttaaaaca gtttttcaca acaaaattta ttagaagaat agtggttttg
                                                                        60
aaaactctcg catccagtga gaactaccat acaccacatt acagctngga atgtnctcca
                                                                       120
aatgtctggt caaatgatac aatggaacca ttcaatctta cacatgcacg aaagaacaag
                                                                       180
cgcttttgac atacaatgca caaaaaaaa agggggggg gaccacatgg attaaaattt
                                                                       240
taagtactca tcacatacat taagacacag ttctagtcca gtcnaaaatc agaactgcnt
                                                                       300
tgaaaaattt catgtatgca atccaaccaa agaacttnat tggtgatcat gantnctcta
                                                                       360
ctacatcnac cttgatcatt gccaggaacn aaaagttnaa ancacncngt acaaaaanaa
                                                                       420
tctgtaattn anttcaacct ccgtacngaa aaatnttnnt tatacactcc c
                                                                       471
      <210> 191
      <211> 402
      <212> DNA
```

```
<213> Homo sapien
      <220>
      <221> misc feature
      <222> (1) ... (402)
      <223> n = A, T, C or G
      <400> 191
gagggattga aggtctgttc tastgtcggm ctgttcagcc accaactcta acaagttgct
                                                                         60
gtcttccact cactgtctgt aagcttttta acccagacwg tatcttcata aatagaacaa
                                                                        120
attetteace agteacatet tetaggacet ttttggatte agttagtata agetetteca
                                                                        180
cttcctttgt taagacttca tctggtaaag tcttaagttt tgtagaaagg aattyaattg
                                                                        240
ctcgttctct aacaatgtcc tctccttgaa gtatttggct gaacaaccca cctaaagtcc
                                                                        300
ctttgtgcat ccattttaaa tatacttaat agggcattgk tncactaggt taaattctgc
                                                                        360
aagagtcatc tgtctgcaaa agttgcgtta gtatatctgc ca
                                                                        402
      <210> 192
      <211> 601
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(601)
      \langle 223 \rangle n = A,T,C or G
      <400> 192
gagctcggat ccaataatct ttgtctgagg gcagcacaca tatncagtgc catggnaact
                                                                        60
ggtctacccc acatgggagc agcatgccgt agntatataa ggtcattccc tgagtcagac
                                                                        120
atgcytyttt gaytaccgtg tgccaagtgc tggtgattct yaacacacyt ccatcccgyt
                                                                        180
cttttgtgga aaaactggca cttktctgga actagcarga catcacttac aaattcaccc
                                                                        240
acgagacact tgaaaggtgt aacaaagcga ytcttgcatt gctttttgtc cctccggcac
                                                                        300
cagttgtcaa tactaacccg ctggtttgcc tccatcacat ttgtgatctg tagctctgga
                                                                        360
tacateteet gacagtactg aagaacttet tettttgttt caaaagcare tettggtgee
                                                                       420
tgttggatca ggttcccatt tcccagtcyg aatgttcaca tggcatattt wacttcccac
                                                                       480
aaaacattgc gatttgaggc tcagcaacag caaatcctgt tccggcattg gctgcaagag
                                                                       540
cctcgatgta gccggccagc gccaaggcag gcgccgtgag ccccaccagc agcagaagca
                                                                       600
a
                                                                       601
      <210> 193
      <211> 608
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(608)
      <223> n = A, T, C or G
      <400> 193
atacagecea nateceacea egaagatgeg ettgttgaet gagaacetga tgeggteact
                                                                        60
ggtcccgctg tagccccagc gactctccac ctgctggaag cggttgatgc tgcactcytt
                                                                       120
cccaacgcag gcagmagcgg gsccggtcaa tgaactccay tcgtggcttg gggtkgacgg
                                                                       180
tkaagtgcag gaagaggctg accacctcgc ggtccaccag gatgcccgac tgtgcgggac
                                                                       240
ctgcagcgaa actcctcgat ggtcatgagc gggaagcgaa tgaggcccag ggccttgccc
                                                                       300
```

```
agaaccttcc gcctgttctc tggcgtcacc tgcagctgct gccgctgaca ctcggcctcg
                                                                        360
gaccagegga caaacggert tgaacageeg caceteaegg atgeecagtg tgtegegete
                                                                        420
caggammgsc accagcgtgt ccaggtcaat gtcggtgaag ccctccgcgg gtratggcgt
                                                                        480
ctgcagtgtt tttgtcgatg ttctccaggc acaggctggc cagctgcggt tcatcgaaga
                                                                        540
gtcgcgcctg cgtgagcagc atgaaggcgt tgtcggctcg cagttcttct tcaggaactc
                                                                        600
cacgcaat
                                                                        608
       <210> 194
       <211> 392
       <212> DNA
       <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(392)
      <223> n = A,T,C or G
      <400> 194
gaacggctgg accttgcctc gcattgtgct tgctggcagg gaataccttg gcaagcagyt
                                                                         60
ccagtccgag cagccccaga ccgctgccgc ccgaagctaa gcctgcctct ggccttcccc
                                                                        120
tccgcctcaa tgcagaacca gtagtgggag cactgtgttt agagttaaga gtgaacactg
                                                                       180
tttgatttta cttgggaatt tcctctgtta tatagctttt cccaatgcta atttccaaac
                                                                       240
aacaacaaca aaataacatg tttgcctgtt aagttgtata aaagtaggtg attctgtatt
                                                                       300
taaagaaaat attactgtta catatactgc ttgcaatttc tgtatttatt gktnctstgg
                                                                       360
aaataaatat agttattaaa ggttgtcant cc
                                                                       392
      <210> 195
      <211> 502
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(502)
      <223> n = A,T,C or G
      <400> 195
ccsttkgagg ggtkaggkyc cagttyccga gtggaagaaa caggccagga gaagtgcgtg
                                                                        60
ccgagctgag gcagatgttc ccacagtgac ccccagagcc stgggstata gtytctgacc
                                                                       120
cctcncaagg aaagaccacs ttctggggac atgggctgga gggcaggacc tagaggcacc
                                                                       180
aagggaaggc cccattccgg ggstgttccc cgaggaggaa gggaaggggc tctgtgtgcc
                                                                       240
ccccasgagg aagaggccct gagtcctggg atcagacacc ccttcacgtg tatccccaca
                                                                       300
caaatgcaag ctcaccaagg tccccttca gtccccttcc stacaccctg amcggccact
                                                                       360
gscscacacc cacccagage acgccacccg ccatggggar tgtgctcaag gartegengg
                                                                       420
gcarcgtgga catcingtcc cagaaggggg cagaatctcc aatagangga cigarcmstt
                                                                       480
gctnanaaaa aaaaanaaaa aa
                                                                     · 502
      <210> 196
      <211> 665
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(665)
```

180

240

300

360

420

```
\langle 223 \rangle n = A,T,C or G
      <400> 196
ggttacttgg tttcattgcc accacttagt ggatgtcatt tagaaccatt ttgtctqctc
                                                                         60
cctctggaag ccttgcgcag agcggacttt gtaattgttg gagaataact gctgaatttt
                                                                        120
wagctgtttk gagttgatts gcaccactgc acccacaact tcaatatgaa aacyawttga
                                                                        180
actwatttat tatcttgtga aaagtataac aatgaaaatt ttgttcatac tgtattkatc
                                                                        240
aagtatgatg aaaagcaawa gatatatatt cttttattat gttaaattat gattgccatt
                                                                        300
attaatcggc aaaatgtgga gtgtatgttc ttttcacagt aatatatgcc ttttqtaact
                                                                        360
tcacttggtt attttattgt aaatgartta caaaattctt aatttaagar aatggtatgt
                                                                        420
watatttatt tcattaattt ctttcctkgt ttacgtwaat tttgaaaaga wtgcatgatt
                                                                        480
tcttgacaga aatcgatctt gatgctgtgg aagtagtttg acccacatcc ctatgagttt
                                                                        540
ttcttagaat gtataaaggt tgtagcccat cnaacttcaa agaaaaaaat gaccacatac
                                                                        600
tttgcaatca ggctgaaatg tggcatgctn ttctaattcc aactttataa actagcaaan
                                                                        660
aaqtq
                                                                        665
      <210> 197
      <211> 492
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1) ... (492)
      <223> n = A, T, C or G
      <400> 197
ttttnttttt tttttttgc aggaaggatt ccatttattg tggatgcatt ttcacaatat
                                                                        60
atgtttattg gagcgatcca ttatcagtga aaagtatcaa gtgtttataa natttttagg
                                                                       120
aaggcagatt cacagaacat gctngtcngc ttgcagtttt acctcgtana gatnacagag
                                                                       180
aattatagtc naaccagtaa acnaggaatt tacttttcaa aagattaaat ccaaactgaa
                                                                       240
caaaattcta ccctgaaact tactccatcc aaatattgga ataanagtca gcagtgatac
                                                                       300
attotottot gaactitaga tittotagaa aaatatgtaa tagtgatcag gaaqaqotot
                                                                       360
tgttcaaaag tacaacnaag caatgttccc ttaccatagg ccttaattca aactttgatc
                                                                       420
cattteacte ceateacggg agteaatget acctgggaca cttgtatttt gtteatnetg
                                                                       480
ancntggctt aa
                                                                       492
      <210> 198
      <211> 478
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(478)
      <223> n = A,T,C or G
      <400> 198
tttnttttgn atttcantct gtannaanta ttttcattat gtttattana aaaatatnaa
                                                                        60
```

tgtntccacn acaaatcatn ttacntnagt aagaggccan ctacattgta caacatacac

tgagtatatt ttgaaaagga caagtttaaa gtanacncat attgccganc atancacatt

tatacatggc ttgattgata tttagcacag canaaactga gtgagttacc agaaanaaat

natatatgtc aatcngattt aagatacaaa acagatccta tggtacatan catcntgtag

gagttgtggc tttatgttta ctgaaagtca atgcagttcc tgtacaaaga gatggccqta

agcattctag tacctctact ccatggttaa gaatcgtaca cttatgttta catatgtnca

```
gggtaagaat tgtgttaagt naanttatgg agaggtccan gagaaaaatt tgatncaa
                                                                         478
       <210> 199
       <211> 482
       <212> DNA
       <213> Homo sapien
       <220>
       <221> misc feature
       <222> (1)...(482)
       \langle 223 \rangle n = A,T,C or G
      <400> 199
agtgacttgt cctccaacaa aaccccttga tcaagtttgt ggcactgaca atcagaccta
                                                                         60
tgctagttcc tgtcatctat tcgctactaa atgcagactg gaggggacca aaaaggggca
                                                                        120
tcaactccag ctggattatt ttggagcctg caaatctatt cctacttgta cggactttga
                                                                        180
agtgattcag tttcctctac ggatgagaga ctggctcaag aatatcctca tgcagcttta
                                                                        240
tgaagccnac tctgaacacg ctggttatct nagatgagaa ncagagaaat aaagtcnaga
                                                                        300
aaatttacct ggangaaaag aggetttngg etggggacca teccattgaa eettetetta
                                                                        360
anggacttta agaanaaact accacatgtn tgtngtatcc tggtgccngg ccgtttantg
                                                                        420
aacntngacn neaccettnt ggaatanant ettgaengen teetgaactt geteetetge
                                                                        480
ga
                                                                        482
      <210> 200
      <211> 270
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(270)
      <223> n = A, T, C or G
      <400> 200
cggccgcaag tgcaactcca gctggggccg tgcggacgaa gattctgcca gcagttggtc
                                                                         60
cgactgcgac gacggcggcg gcgacagtcg caggtgcagc gcgggcgcct ggggtcttgc
                                                                        120
aaggetgage tgaegeegea gaggtegtgt caegteecae gaeettgaeg eegtegggga
                                                                        180
cagccggaac agagcccggt gaangcggga ggcctcgggg agcccctcgg gaagggcggc
                                                                        240
ccgagagata cgcaggtgca ggtggccgcc
                                                                        270
      <210> 201
      <211> 419
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(419)
      <223> n = A, T, C or G
      <400> 201
tttttttttt ttttggaatc tactgcgagc acagcaggtc agcaacaagt ttattttgca
                                                                        60
gctagcaagg taacagggta gggcatggtt acatgttcag gtcaacttcc tttgtcgtgg
                                                                       120
ttgattggtt tgtctttatg ggggcggggt ggggtagggg aaancgaagc anaantaaca
                                                                       180
tggagtgggt gcaccctccc tgtagaacct ggttacnaaa gcttggggca gttcacctgg
                                                                       240
```

```
tctgtgaccg tcattttctt gacatcaatg ttattagaag tcaggatatc ttttagagag
                                                                      300
tccactgtnt ctggagggag attagggttt cttgccaana tccaancaaa atccacntga
                                                                      360
aaaagttgga tgatncangt acngaatacc ganggcatan ttctcatant cggtggcca
                                                                      419
      <210> 202
      <211> 509
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(509)
      <223> n = A, T, C \text{ or } G
      <400> 202
60
tggcacttaa tccattttta tttcaaaatg tctacaaant ttnaatncnc cattatacng
                                                                     120
gtnattttnc aaaatctaaa nnttattcaa atntnagcca aantccttac ncaaatnnaa
                                                                     180
tacncncaaa aatcaaaaat atacntntct ttcagcaaac ttngttacat aaattaaaaa
                                                                     240
aatatatacg gctggtgttt tcaaagtaca attatcttaa cactgcaaac atntttnnaa
                                                                     300
ggaactaaaa taaaaaaaaa cactnccgca aaggttaaag ggaacaacaa attcntttta
                                                                     360
caacancnnc nattataaaa atcatatctc aaatcttagg ggaatatata cttcacacng
                                                                     420
ggatcttaac ttttactnca ctttgtttat ttttttanaa ccattgtntt gggcccaaca
                                                                     480
caatggnaat nccnccncnc tggactagt
                                                                     509
      <210> 203
      <211> 583
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1) ... (583)
      <223> n = A,T,C or G
      <400> 203
ttttttttt tttttttga cccccctctt ataaaaaaca agttaccatt ttattttact
                                                                      60
tacacatatt tattttataa ttggtattag atattcaaaa ggcagctttt aaaatcaaac
                                                                     120
taaatggaaa ctgccttaga tacataattc ttaggaatta gcttaaaatc tgcctaaagt
                                                                     180
gaaaatcttc tctagctctt ttgactgtaa atttttgact cttgtaaaac atccaaattc
                                                                     240
attitititi tottitaaaat tatotaatot tiooattiti toootatioo aagtoaatti
                                                                     300
gcttctctag cctcatttcc tagctcttat ctactattag taagtggctt ttttcctaaa
                                                                     360
agggaaaaca ggaagagana atggcacaca aaacaaacat tttatattca tatttctacc
                                                                     420
tacgttaata aaatagcatt ttgtgaagcc agctcaaaag aaggcttaga tccttttatg
                                                                     480
tccattttag tcactaaacg atatcnaaag tgccagaatg caaaaggttt gtgaacattt
                                                                     540
attcaaaagc taatataaga tatttcacat actcatcttt ctg
                                                                    583
      <210> 204
     <211> 589
     <212> DNA
     <213> Homo sapien
     <220>
     <221> misc_feature
     <222> (1) ... (589)
```

480

```
<223> n = A,T,C or G
      <400> 204
tttttttttt ttttttttt ttttttnctc ttctttttt ttganaatga ggatcgagtt
                                                                        60
tttcactctc tagatagggc atgaagaaaa ctcatctttc cagctttaaa ataacaatca
                                                                        120
aatctcttat gctatatcat attttaagtt aaactaatga gtcactggct tatcttctcc
                                                                        180
tgaaggaaat ctgttcattc ttctcattca tatagttata tcaagtacta ccttgcatat
                                                                        240
tgagaggttt ttcttctcta tttacacata tatttccatg tgaatttgta tcaaaccttt
                                                                        300
attttcatgc aaactagaaa ataatgtntt cttttgcata agagaagaga acaatatnag
                                                                        360
cattacaaaa ctgctcaaat tgtttgttaa gnttatccat tataattagt tnggcaggag
                                                                       420
ctaatacaaa tcacatttac ngacnagcaa taataaaact gaagtaccag ttaaatatcc
                                                                       480
aaaataatta aaggaacatt tttagcctgg gtataattag ctaattcact ttacaagcat
                                                                       540
ttattnagaa tgaattcaca tgttattatt ccntagccca acacaatgg
                                                                       589
      <210> 205
      <211> 545
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(545)
      <223> n = A,T,C or G
      <400> 205
tttttntttt ttttttcagt aataatcaga acaatattta tttttatatt taaaattcat
                                                                        60
agaaaagtgc cttacattta ataaaagttt gtttctcaaa gtgatcagag gaattagata
                                                                       120
tngtcttgaa caccaatatt aatttgagga aaatacacca aaatacatta agtaaattat
                                                                       180
ttaagatcat agagcttyta agtgaaaaga taaaatttga cctcagaaac tctgagcatt
                                                                       240
aaaaatccac tattagcaaa taaattacta tggacttctt gctttaattt tgtgatgaat
                                                                       300
atggggtgtc actggtaaac caacacattc tgaaggatac attacttagt gatagattct
                                                                       360
tatgtacttt gctanatnac gtggatatga gttgacaagt ttctctttct tcaatctttt
                                                                       420
aaggggcnga ngaaatgagg aagaaaagaa aaggattacg catactgttc tttctatngg
                                                                       480
aaggattaga tatgtttcct ttgccaatat taaaaaaata ataatgttta ctactagtga
                                                                       540
aaccc
                                                                       545
      <210> 206
      <211> 487
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(487)
      <223> n = A,T,C or G
      <400> 206
tttttttttt ttttttagtc aagtttctna tttttattat aattaaagtc ttggtcattt
                                                                       60
catttattag ctctgcaact tacatattta aattaaagaa acgttnttag acaactgtna
                                                                      120
caatttataa atgtaaggtg ccattattga gtanatatat tcctccaaga gtggatgtgt
                                                                      180
cccttctccc accaactaat gaancagcaa cattagttta attttattag tagatnatac
                                                                      240
actgctgcaa acgctaattc tcttctccat ccccatgtng atattgtgta tatgtgtgag
                                                                      300
ttggtnagaa tgcatcanca atctnacaat caacagcaag atgaagctag gcntgggctt
                                                                      360
```

tcggtgaaaa tagactgtgt ctgtctgaat caaatgatct gacctatcct cggtggcaag

aactettega acegetteet caaaggenge tgecacattt gtggentetn ttgeacttgt

```
ttcaaaa
                                                                         487
      <210> 207
      <211> 332
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(332)
      <223> n = A,T,C or G
      <400> 207
tgaattggct aaaagactgc atttttanaa ctagcaactc ttatttcttt cctttaaaaa
                                                                         60
tacatagcat taaatcccaa atcctattta aagacctgac agcttgagaa ggtcactact
                                                                        120
gcatttatag gaccttctgg tggttctgct gttacntttg aantctgaca atccttgana
                                                                        180
atctttgcat gcagaggagg taaaaggtat tggattttca cagaggaana acacagcgca
                                                                        240
gaaatgaagg ggccaggctt actgagcttg tccactggag ggctcatggg tgggacatgg
                                                                        300
aaaagaaggc agcctaggcc ctggggagcc ca
                                                                        332
      <210> 208
      <211> 524
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(524)
      \langle 223 \rangle n = A,T,C or G
      <400> 208
agggcgtggt gcggagggcg ttactgtttt gtctcagtaa caataaatac aaaaagactg
                                                                        60
gttgtgttcc ggccccatcc aaccacgaag ttgatttctc ttgtgtgcag agtgactgat
                                                                       120
tttaaaggac atggagcttg tcacaatgtc acaatgtcac agtgtgaagg gcacactcac
                                                                       180
tcccgcgtga ttcacattta gcaaccaaca atagctcatg agtccatact tgtaaatact
                                                                       240
tttggcagaa tacttnttga aacttgcaga tgataactaa gatccaagat atttcccaaa
                                                                       300
gtaaatagaa gtgggtcata atattaatta cctgttcaca tcagcttcca tttacaagtc
                                                                       360
atgageceag acaetgaeat caaactaage ceaettagae teeteaceae cagtetgtee
                                                                       420
tgtcatcaga caggaggctg tcaccttgac caaattctca ccagtcaatc atctatccaa
                                                                       480
aaaccattac ctgatccact tccggtaatg caccaccttg gtga
                                                                       524
      <210> 209
      <211> 159
      <212> DNA
      <213> Homo sapien
      <400> 209
gggtgaggaa atccagagtt gccatggaga aaattccagt gtcagcattc ttgctccttg
                                                                        60
tggccctctc ctacactctg gccagagata ccacagtcaa acctggagcc aaaaaggaca
                                                                       120
caaaggactc tcgacccaaa ctgccccaga ccctctcca
                                                                       159
      <210> 210
      <211> 256
      <212> DNA
      <213> Homo sapien
```

```
<220>
       <221> misc_feature
       <222> (1)...(256)
       \langle 223 \rangle n = A,T,C or G
       <400> 210
actccctggc agacaaaggc agaggagaga gctctgttag ttctgtgttg ttgaactgcc
                                                                          60
actgaatttc tttccacttg gactattaca tgccanttga gggactaatg gaaaaacgta
                                                                         120
tggggagatt ttanccaatt tangtntgta aatggggaga ctggggcagg cgggagagat
                                                                         180
ttgcagggtg naaatgggan ggctggtttg ttanatgaac agggacatag gaggtaggca
                                                                         240
ccaggatgct aaatca
                                                                         256
       <210> 211
       <211> 264
       <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(264)
      <223> n = A,T,C or G
      <400> 211
acattgtttt tttgagataa agcattgaga gagctctcct taacgtgaca caatggaagg
                                                                         60
actggaacac atacccacat ctttgttctg agggataatt ttctgataaa gtcttgctgt
                                                                        120
atattcaagc acatatgtta tatattattc agttccatgt ttatagccta gttaaggaga
                                                                        180
ggggagatac attengaaag aggaetgaaa gaaataetea agtnggaaaa cagaaaaaga
                                                                        240
aaaaaaggag caaatgagaa gcct
                                                                        264
      <210> 212
      <211> 328
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(328)
      <223> n = A,T,C or G
      <400> 212
acccaaaaat ccaatgctga atatttggct tcattattcc canattcttt gattgtcaaa
                                                                         60
ggatttaatg ttgtctcagc ttgggcactt cagttaggac ctaaggatgc cagccggcag
                                                                        120
gtttatatat gcagcaacaa tattcaagcg cgacaacagg ttattgaact tgcccgccag
                                                                        180
ttnaatttca ttcccattga cttgggatcc ttatcatcag ccagagagat tgaaaattta
                                                                       240
cccctacnac tetttactet etgganaggg ccagtggtgg tagetataag ettggecaca
                                                                       300
ttttttttc ctttattcct ttgtcaga
                                                                       328
      <210> 213
      <211> 250
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
```

```
<222> (1)...(250)
      <223> n = A,T,C or G
      <400> 213
acttatgage agagegacat atcenagtgt agactgaata aaactgaatt ctctccagtt
                                                                         60
taaagcattg ctcactgaag ggatagaagt gactgccagg agggaaagta agccaaggct
                                                                        120
cattatgcca aagganatat acatttcaat tctccaaact tcttcctcat tccaaqagtt
                                                                        180
ttcaatattt gcatgaacct gctgataanc catgttaana aacaaatatc tctctnacct
                                                                        240
tctcatcggt
                                                                        250
      <210> 214
      <211> 444
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(444)
      <223> n = A,T,C or G
      <400> 214
acccagaatc caatgctgaa tatttggctt cattattccc agattctttg attgtcaaag
                                                                        60
gatttaatgt tgtctcagct tgggcacttc agttaggacc taaggatgcc agccggcagg
                                                                       120
tttatatatg cagcaacaat attcaagcgc gacaacaggt tattgaactt gcccgccagt
                                                                       180
tgaatttcat tcccattgac ttgggatcct tatcatcagc canagagatt gaaaatttac
                                                                       240
ccctacgact ctttactctc tggagagggc cagtggtggt agctataagc ttggccacat
                                                                       300
tttttttcc tttattcctt tgtcagagat gcgattcatc catatgctan aaaccaacag
                                                                       360
agtgactttt acaaaattcc tataganatt gtgaataaaa ccttacctat agttgccatt
                                                                       420
actttgctct ccctaatata cctc
                                                                       444
      <210> 215
      <211> 366
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(366)
      <223> n = A,T,C or G
      <400> 215
acttatgage agagegacat atccaagtgt anactgaata aaactgaatt ctctccagtt
                                                                        60
taaagcattg ctcactgaag ggatagaagt gactgccagg agggaaagta agccaaggct
                                                                       120
cattatgcca aagganatat acatttcaat tctccaaact tcttcctcat tccaaqaqtt
                                                                       180
ttcaatattt gcatgaacct gctgataagc catgttgaga aacaaatatc tctctgacct
                                                                       240
tctcatcggt aagcagaggc tgtaggcaac atggaccata gcgaanaaaa aacttagtaa
                                                                       300
tccaagctgt tttctacact gtaaccaggt ttccaaccaa ggtggaaatc tcctatactt
                                                                       360
ggtgcc.
                                                                       366
      <210> 216
      <211> 260
      <212> DNA
      <213> Homo sapien
      <220>
```

```
<221> misc_feature
       <222> (1)...(260)
       <223> n = A, T, C or G
       <400> 216
ctgtataaac agaactccac tgcangaggg agggccgggc caggagaatc tccgcttgtc
                                                                         60
caagacaggg gcctaaggag ggtctccaca ctgctnntaa gggctnttnc attttttat
                                                                        120
taataaaaag tnnaaaaggc ctcttctcaa cttttttccc ttnggctgga aaatttaaaa
                                                                        180
atcaaaaatt tootnaagtt ntoaagctat catatatact ntatootgaa aaagcaacat
                                                                        240
aattcttcct tccctccttt
                                                                        260
      <210> 217
      <211> 262
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(262)
      <223> n = A,T,C or G
      <400> 217
acctacgtgg gtaagtttan aaatgttata atttcaggaa naggaacgca tataattgta
                                                                         60
tcttgcctat aattttctat tttaataagg aaatagcaaa ttggggtggg gggaatgtag
                                                                       120
ggcattctac agtttgagca aaatgcaatt aaatgtggaa ggacagcact gaaaaatttt
                                                                        180
atgaataatc tgtatgatta tatgtctcta gagtagattt ataattagcc acttacccta
                                                                        240
atateettea tgettgtaaa gt
                                                                        262
      <210> 218
      <211> 205
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(205)
      <223> n = A, T, C or G
      <400> 218
accaaggtgg tgcattaccg gaantggatc aangacacca tcgtggccaa cccctgagca
                                                                        60
cccctatcaa ctcccttttg tagtaaactt ggaaccttgg aaatgaccag gccaagactc
                                                                       120
aggcctcccc agttctactg acctttgtcc ttangtntna ngtccagggt tgctaggaaa
                                                                       180
anaaatcagc agacacaggt gtaaa
                                                                       205
      <210> 219
      <211> 114
      <212> DNA
      <213> Homo sapien
      <400> 219
tactgttttg tctcagtaac aataaataca aaaagactgg ttgtgttccg gccccatcca
                                                                        60
accacgaagt tgatttctct tgtgtgcaga gtgactgatt ttaaaggaca tgga
                                                                       114
      <210> 220
      <211> 93
```

```
<212> DNA
      <213> Homo sapien
      <400> 220
actagccagc acaaaaggca gggtagcctg aattgctttc tgctctttac atttctttta
                                                                         60
aaataagcat ttagtgctca gtccctactg agt
                                                                         93
      <210> 221
      <211> 167
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(167)
      \langle 223 \rangle n = A,T,C or G
      <400> 221
actangtgca ggtgcgcaca aatatttgtc gatattccct tcatcttgga ttccatgagg
                                                                         60
tettttgece ageetgtgge tetactgtag taagtttetg etgatgagga geeagnatge
                                                                        120
ccccactac cttccctgac gctccccana aatcacccaa cctctgt
                                                                        167
      <210> 222
      <211> 351
      <212> DNA
      <213> Homo sapien
      <400> 222
agggcgtggt gcggagggcg gtactgacct cattagtagg aggatgcatt ctggcacccc
                                                                        60
gttcttcacc tgtcccccaa tccttaaaag gccatactgc ataaagtcaa caacaqataa
                                                                        120
atgtttgctg aattaaagga tggatgaaaa aaattaataa tgaatttttg cataatccaa
                                                                       180
ttttctcttt tatatttcta gaagaagttt ctttgagcct attagatccc gggaatcttt
                                                                       240
taggtgagca tgattagaga gcttgtaggt tgcttttaca tatatctggc atatttgagt
                                                                        300
ctcgtatcaa aacaatagat tggtaaaggt ggtattattg tattgataag t
                                                                        351
      <210> 223
      <211> 383
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1) ... (383)
      <223> n = A,T,C or G
      <400> 223
aaaacaaaca aacaaaaaaa acaattcttc attcagaaaa attatcttag ggactgatat
                                                                        60
tggtaattat ggtcaattta atwrtrttkt ggggcatttc cttacattgt cttgacaaga
                                                                       120
ttaaaatgtc tgtgccaaaa ttttgtattt tatttggaga cttcttatca aaagtaatgc
                                                                       180
tgccaaagga agtctaagga attagtagtg ttcccmtcac ttgtttggag tgtgctattc
                                                                       240
taaaagattt tgatttcctg gaatgacaat tatattttaa ctttqqtqqq qqaaanaqtt
                                                                       300
ataggaccac agtetteact tetgatactt gtaaattaat ettttattge acttgttttg
                                                                       360
accattaagc tatatgttta aaa
                                                                       383
```

<210> 224

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<211> 320
       <212> DNA
       <213> Homo sapien
       <400> 224
cccctgaagg cttcttgtta gaaaatagta cagttacaac caataggaac aacaaaaaga
                                                                       60
aaaagtttgt gacattgtag tagggagtgt gtacccctta ctccccatca aaaaaaaaa
                                                                      120
ggatacatgg ttaaaggata raagggcaat attttatcat atgttctaaa agagaaggaa
                                                                      180
gagaaaatac tactttctcr aaatggaagc ccttaaaggt gctttgatac tgaaggacac
                                                                      240
aaatgtggcc gtccatcctc ctttaragtt gcatgacttg gacacggtaa ctgttgcagt
                                                                      300
tttaractcm gcattqtqac
                                                                      320
      <210> 225
      <211> 1214
      <212> DNA
      <213> Homo sapien
      <400> 225
gaggactgca gcccgcactc gcagccctgg caggcggcac tggtcatgga aaacgaattg
                                                                      60
ttctgctcgg gcgtcctggt gcatccgcag tgggtgctgt cagccgcaca ctgtttccag
                                                                     120
aactcctaca ccatcgggct gggcctgcac agtcttgagg ccgaccaaga gccagggagc
                                                                     180
cagatggtgg aggccagcct ctccgtacgg cacccagagt acaacagacc cttgctcgct
                                                                     240
aacgacctca tgctcatcaa gttggacgaa tccgtgtccg agtctgacac catccggagc
                                                                     300
atcagcattg cttcgcagtg ccctaccgcg gggaactctt gcctcgtttc tggctggggt
                                                                     360
ctgctggcga acggcagaat gcctaccgtg ctgcagtgcg tgaacgtgtc ggtggtgtct
                                                                     420
gaggaggtct gcagtaagct ctatgacccg ctgtaccacc ccagcatgtt ctgcgccggc
                                                                     480
ggagggcaag accagaagga ctcctgcaac ggtgactctg gggggcccct gatctgcaac
                                                                     540
gggtacttgc agggccttgt gtctttcgga aaagccccgt gtggccaagt tggcgtgcca
                                                                     600
ggtgtctaca ccaacctctg caaattcact gagtggatag agaaaaccgt ccaggccagt
                                                                     660
taactctggg gactgggaac ccatgaaatt gacccccaaa tacatcctgc ggaaggaatt
                                                                     720
caggaatate tgtteccage ceetecteee teaggeccag gagtecagge ecceagecee
                                                                     780
tecteectea aaccaagggt acagateece ageceeteet ceeteagace caggagteea
                                                                     840
gacccccag ccctcctcc ctcagaccca ggagtccagc ccctcctccc tcagacccag
                                                                     900
gagtccagac ccccagccc ctcctccctc agacccaggg gtccaggccc ccaacccctc
                                                                     960
ctccctcaga ctcagaggtc caagccccca acccctcctt ccccagaccc agaggtccag
                                                                    1020
gtcccagccc ctcctccctc agacccagcg gtccaatgcc acctagactc tccctgtaca
                                                                    1080
cagtgcccc ttgtggcacg ttgacccaac cttaccagtt ggtttttcat tttttgtccc
                                                                    1140
1200
aaaaaaaaa aaaa
                                                                   1214
      <210> 226
      <211> 119
      <212> DNA
      <213> Homo sapien
      <400> 226
acccagtatg tgcagggaga cggaacccca tgtgacagcc cactccacca gggttcccaa
                                                                     60
agaacctggc ccagtcataa tcattcatcc tgacagtggc aataatcacg ataaccagt
                                                                    119
      <210> 227
      <211> 818
     <212> DNA
     <213> Homo sapien
     <400> 227
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```
acaattcata gggacgacca atgaggacag ggaatgaacc cggctctccc ccagccctga
                                                                        60
tttttgctac atatggggtc ccttttcatt ctttgcaaaa acactgggtt ttctgagaac
                                                                       120
acggacggtt cttagcacaa tttgtgaaat ctgtgtaraa ccgggctttg caggggagat
                                                                       180
aattttcctc ctctggagga aaggtggtga ttgacaggca gggagacagt gacaaggcta
                                                                       240
gagaaagcca cgctcggcct tctctgaacc aggatggaac ggcagacccc tgaaaacgaa
                                                                       300
gcttgtcccc ttccaatcag ccacttctga gaacccccat ctaacttcct actggaaaag
                                                                       360
agggcctcct caggagcagt ccaagagttt tcaaagataa cgtgacaact accatctaga
                                                                       420
ggaaagggtg caccctcagc agagaagccg agagcttaac tctggtcgtt tccagagaca
                                                                       480
acctgctggc tgtcttggga tgcgcccagc ctttgagagg ccactacccc atgaacttct
                                                                       540
gccatccact ggacatgaag ctgaggacac tgggcttcaa cactgagttg tcatgagagg
                                                                       600
gacaggetet geceteaage eggetgaggg cageaaceae teteeteece ttteteacge
                                                                       660
aaagccattc ccacaaatcc agaccatacc atgaagcaac gagacccaaa cagtttggct
                                                                       720
caagaggata tgaggactgt ctcagcctgg ctttgggctg acaccatgca cacacacaag
                                                                       780
gtccacttct aggttttcag cctagatggg agtcgtgt
                                                                       818
      <210> 228
      <211> 744
      <212> DNA
      <213> Homo sapien
      <400> 228
actggagaca ctgttgaact tgatcaagac ccagaccacc ccaggtctcc ttcgtgggat
                                                                        60
gtcatgacgt ttgacatacc tttggaacga gcctcctcct tggaagatgg aagaccgtgt
                                                                       120
tegtggeega cetggeetet eetggeetgt ttettaagat geggagteac attteaatgg
                                                                       180
taggaaaagt ggcttcgtaa aatagaagag cagtcactgt ggaactacca aatggcgaga
                                                                       240
tgctcggtgc acattggggt gctttgggat aaaagattta tgagccaact attctctggc
                                                                       300
accagattct aggccagttt gttccactga agcttttccc acagcagtcc acctctgcag
                                                                       360
gctggcagct gaatggcttg ccggtggctc tgtggcaaga tcacactgag atcgatgggt
                                                                       420
gagaaggcta ggatgcttgt ctagtgttct tagctgtcac gttggctcct tccaggttgg
                                                                       480
ccagacggtg ttggccactc ccttctaaaa cacaggcgcc ctcctggtga cagtgacccg
                                                                       540
ccgtggtatg ccttggccca ttccagcagt cccagttatg catttcaagt ttggggtttg
                                                                       600
ttottttogt taatgttoot otgtgttgto agotgtotto atttootggg ctaaqcaqca
                                                                       660
ttgggagatg tggaccagag atccactcct taagaaccag tggcgaaaga cactttcttt
                                                                       720
cttcactctg aagtagctgg tggt
                                                                       744
      <210> 229
      <211> 300
      <212> DNA
      <213> Homo sapien
      <400> 229
cgagtctggg ttttgtctat aaagtttgat ccctcctttt ctcatccaaa tcatgtgaac
                                                                       60
cattacacat cgaaataaaa gaaaggtggc agacttgccc aacgccaggc tgacatgtgc
                                                                      120
tgcagggttg ttgttttta attattattg ttagaaacgt cacccacagt ccctgttaat
                                                                      180
ttgtatgtga cagccaactc tgagaaggtc ctatttttcc acctgcagag gatccagtct
                                                                      240
cactaggete etecttgece teacactgga gteteegeea gtgtgggtge ecactgacat
                                                                      300
      <210> 230
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 230
cagcagaaca aatacaaata tgaagagtgc aaagatctca taaaatctat gctgaggaat
                                                                       60
gagcgacagt tcaaggagga gaagcttgca gagcagctca agcaagctga ggagctcagg
                                                                      120
```

```
caatataaag tootggttca cactcaggaa cgagagctga cocagttaag ggagaagttg
                                                                         180
cgggaaggga gagatgcctc cctctcattg aatgagcatc tccaggccct cctcactccg
                                                                        240
gatgaaccgg acaagtccca ggggcaggac ctccaagaaa cagacctcgg ccgcgaccac
                                                                        300
                                                                        301
       <210> 231
       <211> 301
       <212> DNA
       <213> Homo sapien
       <400> 231
gcaagcacgc tggcaaatct ctgtcaggtc agctccagag aagccattag tcattttagc
                                                                         60
caggaactcc aagtccacat ccttggcaac tggggacttg cgcaggttag ccttgaggat
                                                                        120
ggcaacacgg gacttctcat caggaagtgg gatgtagatg agctgatcaa gacggccagg
                                                                        180
tctgaggatg gcaggatcaa tgatgtcagg ccggttggta ccgccaatga tgaacacatt
                                                                        240
tttttttgtg gacatgccat ccatttctgt caggatctgg ttgatgactc ggtcagcagc
                                                                        300
                                                                        301
      <210> 232
       <211> 301
       <212> DNA
       <213> Homo sapien
      <400> 232
agtaggtatt tcgtgagaag ttcaacacca aaactggaac atagttctcc ttcaagtgtt
                                                                         60
ggcgacagcg gggcttcctg attctggaat ataactttgt gtaaattaac agccacctat
                                                                        120
agaagagtcc atctgctgtg aaggagagac agagaactct gggttccgtc gtcctgtcca
                                                                       180
cgtgctgtac caagtgctgg tgccagcctg ttacctgttc tcactgaaaa tctggctaat
                                                                       240
gctcttgtgt atcacttctg attctgacaa tcaatcaatc aatggcctag agcactgact
                                                                       300
                                                                       301
      <210> 233
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 233
atgactgact tcccagtaag gctctctaag gggtaagtag gaggatccac aggatttgag
                                                                        60
atgctaaggc cccagagatc gtttgatcca accctcttat tttcagaggg gaaaatgggg
                                                                       120
cctagaagtt acagagcatc tagctggtgc gctggcaccc ctggcctcac acagactccc
                                                                       180
gagtagctgg gactacaggc acacagtcac tgaagcaggc cctgttagca attctatgcg
                                                                       240
tacaaattaa catgagatga gtagagactt tattgagaaa gcaagagaaa atcctatcaa
                                                                       300
                                                                       301
      <210> 234
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 234
aggtcctaca catcgagact catccatgat tgatatgaat ttaaaaatta caagcaaaga
                                                                        60
cattttattc atcatgatgc tttcttttgt ttcttcttt cgttttcttc tttttcttt
                                                                       120
tcaatttcag caacatactt ctcaatttct tcaggattta aaatcttgag ggattgatct
                                                                       180
cgcctcatga cagcaagttc aatgtttttg ccacctgact gaaccacttc caggagtgcc
                                                                       240
ttgatcacca gcttaatggt cagatcatct gcttcaatgg cttcgtcagt atagttcttc
                                                                       300
```

```
t
                                                                        301
      <210> 235
      <211> 283
      <212> DNA
      <213> Homo sapien
      <400> 235
tggggctgtg catcaggcgg gtttgagaaa tattcaattc tcagcagaag ccagaatttg
                                                                        60
aattccctca tcttttaggg aatcatttac caggtttgga gaggattcag acagctcagg
                                                                       120
tgctttcact aatgtctctg aacttctgtc cctctttgtt catggatagt ccaataaata
                                                                       180
atgttatctt tgaactgatg ctcataggag agaatataag aactctgagt gatatcaaca
                                                                       240
ttagggattc aaagaaatat tagatttaag ctcacactgg tca
                                                                       283
      <210> 236
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 236
aggtcctcca ccaactgcct gaagcacggt taaaattggg aagaagtata gtgcagcata
                                                                        60
aatactttta aatcgatcag atttccctaa cccacatgca atcttcttca ccagaagagg
                                                                       120
teggageage ateattaata eeaageagaa tgegtaatag ataaatacaa tggtatatag
                                                                       180
tgggtagacg gcttcatgag tacagtgtac tgtggtatcg taatctggac ttqqqttqta
                                                                       240
aagcatcgtg taccagtcag aaagcatcaa tactcgacat gaacgaatat aaaqaacacc
                                                                       300
                                                                       301
      <210> 237
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 237
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                                                                       120
ccttggctaa tgcctcatag taggagtcct cagaccagcc atggggatca aacatatcct
                                                                       180
ttgggtagtt ggtgccaagc tcgtcaatgg cacagaatgg atcagcttct cgtaaatcta
                                                                       240
gggttccgaa attctttctt cctttggata atgtagttca tatccattcc ctcctttatc
                                                                       300
t
                                                                       301
      <210> 238
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 238
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gttcacagtt cagcccctg ctcagaaaac caacgggcca gctaaggaga ggaggagca
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ccttgagact tccggagtcg aggctctcca gggttcccca gcccatcaat cattttctqc
                                                                      180
accecetgee tgggaageag etceetgggg ggtgggaatg ggtgaetaga agggatttea
                                                                      240
gtgtgggacc cagggtctgt tcttcacagt aggaggtgga agggatgact aatttcttta
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t
                                                                      301
      <210> 239
      <211> 239
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<212> DNA
         <213> Homo sapien
         <400> 239
  ataagcagct agggaattct ttatttagta atgtcctaac ataaaagttc acataactgc
  ttctgtcaaa ccatgatact gagctttgtg acaacccaga aataactaag agaaggcaaa
                                                                           60
  cataatacct tagagatcaa gaaacattta cacagttcaa ctgtttaaaa atagctcaac
                                                                          120
  attcagccag tgagtagagt gtgaatgcca gcatacacag tatacaggtc cttcaggga
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                                                                          239
        <210> 240
        <211> 300
        <212> DNA
        <213> Homo sapien
        <400> 240
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 gggatctgcc ctccagtgga accttttaag gaagaagtgg gcccaagcta agttccacat
                                                                          60
 gctgggtgag ccagatgact tctgttccct ggtcactttc ttcaatgggg cgaatggggg
                                                                         120
 ctgccaggtt tttaaaatca tgcttcatct tgaagcacac ggtcacttca ccctcctcac
                                                                         180
 gctgtgggtg tactttgatg aaaataccca ctttgttggc ctttctgaag ctataatgtc
                                                                         240
                                                                         300
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       <211> 301
       <212> DNA
       <213> Homo sapien
       <400> 241
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 cctctttgga ggaaactcca gcagctatgt tggtgtctct gagggaatgc aacaaggctg
                                                                        - 60
 ctcctccatg tattggaaaa ctgcaaactg gactcaactg gaaggaagtg ctgctgccag
                                                                        120
 tgtgaagaac cagcctgagg tgacagaaac ggaagcaaac aggaacagcc agtctttct
                                                                        180
 tectectect greatacggt eteteteaag cateettigt tgteagggge etaaaaggga
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       <211> 301
       <212> DNA
       <213> Homo sapien
       <400> 242
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tgtggcattt cctcattttc tacattgtag aatcaagagt gtaaataaat gtatatcgat
                                                                        60
gtottcaaga atatatoatt cotttttcac tagaacccat toaaaatata agtoaagaat
                                                                       120
cttaatatca acaaatatat caagcaaact ggaaggcaga ataactacca taatttagta
                                                                       180
taagtaccca aagttttata aatcaaaagc cctaatgata accattttta gaattcaatc
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                                                                       300
                                                                       301
      <210> 243
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 243
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ggtggcccaa gctatgaaat cagagggagg cttcatctgg gcctgtaaaa actatgatgg
                                                                       60
                                                                      120
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tgacgtgcag tcggactctg tggcccaagg gtatggctct ctcggcatga tgaccagcgt
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 gctggtttgt ccagatggca agacagtaga agcagaggct gcccacggga ctgtaacccg
                                                                         240
 tcactaccgc atgttccaga aaggacagga gacgtccacc aatcccattg cttccatttt
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                                                                         301
       <210> 244
       <211> 300
       <212> DNA
       <213> Homo sapien
       <400> 244
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 gtcatgcaat cccatttgca ggatctgtct gtgcacatgc ctctgtagag agcagcattc
                                                                         120
 ccagggacct tggaaacagt tgacactgta aggtgcttgc tccccaagac acatcctaaa
                                                                        180
 aggtgttgta atggtgaaaa cgtcttcctt ctttattgcc ccttcttatt tatgtgaaca
                                                                        240
 actgtttgtc ttttgtgtat cttttttaaa ctgtaaagtt caattgtgaa aatgaatatc
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       <211> 301
       <212> DNA
       <213> Homo sapien
       <400> 245
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                                                                        120
aaggccagga gatattgtca ttaatgtara cttcaggaca ctagagtata gcagcctat
                                                                        180
gttttcaaag agcagagatg caattaaata ttgtttagca tcaaaaaggc cactcaatac
                                                                        240
agctaataaa atgaaagacc taatttctaa agcaattctt tataatttac aaagttttaa
                                                                        300
g
                                                                        301
      <210> 246
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 246
ggtctgtcct acaatgcctg cttcttgaaa gaagtcggca ctttctagaa tagctaaata
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acctgggctt attttaaaga actatttgta gctcagattg gttttcctat ggctaaaata
                                                                       120
agtgcttctt gtgaaaatta aataaaacag ttaattcaaa gccttgatat atgttaccac
                                                                       180
taacaatcat actaaatata ttttgaagta caaagtttga catgctctaa agtgacaacc
                                                                       240
caaatgtgtc ttacaaaaca cgttcctaac aaggtatgct ttacactacc aatgcagaaa
                                                                       300
C
                                                                       301
      <210> 247
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 247
aggicetitg geagggetea iggateagag eteaaacigg agggaaagge attiegggta
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gcctaagagg gcgactggcg gcagcacaac caaggaaggc aaggttgttt cccccacgct
                                                                       120
gtgtcctgtg ttcaggtgcg acacacaatc ctcatgggaa caggatcacc catgcgctgc
                                                                       180
ccttgatgat caaggttggg gcttaagtgg attaagggag gcaagttctg ggttccttgc
                                                                       240
cttttcaaac catgaagtca ggctctgtat ccctcctttt cctaactgat attctaacta
                                                                       300
а
                                                                       301
```

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<210> 248
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 248
aggiccitgg agaigccatt icageegaag gaetettetw tieggaagta caeceteaet
                                                                         60
attaggaaga ttcttagggg taatttttct gaggaaggag aactagccaa cttaagaatt
                                                                        120
acaggaagaa agtggtttgg aagacagcca aagaaataaa agcagattaa attgtatcag
                                                                        180
gtacattcca gcctgttggc aactccataa aaacatttca gattttaatc ccgaatttag
                                                                        240
ctaatgagac tggatttttg ttttttatgt tgtgtgtcgc agagctaaaa actcaqttcc
                                                                        300
                                                                        301
      <210> 249
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 249
gtccagagga agcacctggt gctgaactag gcttgccctg ctgtgaactt gcacttggag
                                                                        60
ccctgacgct gctgttctcc ccgaaaaacc cgaccgacct ccgcgatctc cgtcccgccc
                                                                       120
ccagggagac acagcagtga ctcagagctg gtcgcacact gtgcctccct cctcaccgcc
                                                                       180
catcgtaatg aattattttg aaaattaatt ccaccatcct ttcagattct ggatggaaag
                                                                       240
actgaatctt tgactcagaa ttgtttgctg aaaagaatga tgtgactttc ttagtcattt
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                                                                       301
      <210> 250
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 250
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cttatcttta ttggcttgat aaacataatt atttctaaca ctagcttatt tccagttgcc
                                                                       120
cataagcaca tcagtacttt tctctggctg gaatagtaaa ctaaagtatg gtacatctac
                                                                       180
ctaaaagact actatgtgga ataatacata ctaatgaagt attacatgat ttaaagacta
                                                                       240
caataaaacc aaacatgctt ataacattaa gaaaaacaat aaagatacat gattgaaacc
                                                                       300
                                                                       301
      <210> 251
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 251
geogaggtee tacatttgge coagttteee cetgeateet etecagggee cetgeeteat
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agacaacctc atagagcata ggagaactgg ttgccctggg ggcaggggga ctgtctggat
                                                                       120
ggcaggggtc ctcaaaaatg ccactgtcac tgccaggaaa tgcttctgag cagtacacct
                                                                       180
cattgggatc aatgaaaagc ttcaagaaat cttcaggctc actctcttga aggcccggaa
                                                                       240
cctctggagg ggggcagtgg aatcccagct ccaggacgga tcctgtcgaa aagatatcct
                                                                       300
                                                                       301
      <210> 252
      <211> 301
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<212> DNA
        <213> Homo sapien
        <400> 252
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 ttttctacat tgtagaatca agagtgtaaa taaatgtata tcgatgtctt caagaatata
                                                                         120
 tcattccttt ttcactagga acccattcaa aatataagtc aagaatctta atatcaacaa
                                                                         180
 atatatcaag caaactggaa ggcagaataa ctaccataat ttagtataag tacccaaagt
                                                                         240
 tttataaatc aaaagcccta atgataacca tttttagaat tcaatcatca ctgtagaatc
                                                                        300
                                                                        301
       <210> 253
       <211> 301
       <212> DNA
       <213> Homo sapien
       <400> 253
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                                                                         60
caactaaaaa aaaaaataa agaaaaaatg tgctgcgttc tgaaaaataa ctccttagct
tggtctgatt gttttcagac cttaaaatat aaacttgttt cacaagcttt aatccatgtg
                                                                        120
                                                                        180
gatttttttt cttagagaac cacaaaacat aaaaggagca agtcggactg aatacctgtt
                                                                        240
tccatagtgc ccacagggta ttcctcacat tttctccata ggaaaatgct ttttcccaag
                                                                        300
 g
                                                                        301
       <210> 254
       <211> 301
       <212> DNA
       <213> Homo sapien
      <400> 254
cgctgcgcct ttcccttggg ggagggcaa ggccagaggg ggtccaagtg cagcacgagg
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aacttgacca attcccttga agcgggtggg ttaaaccctg taaatgggaa caaaatcccc
                                                                       120
ccaaatctct tcatcttacc ctggtggact cctgactgta gaattttttg gttgaaacaa
                                                                       180
gaaaaaata aagetttgga ettttcaagg ttgettaaca ggtaetgaaa gaetggeete
                                                                       240
acttaaactg agccaggaaa agctgcagat ttattaatgg gtgtgttagt gtgcagtgcc
                                                                       300
t
                                                                       301
      <210> 255
      <211> 302
      <212> DNA
      <213> Homo sapien
      <400> 255
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attactgaaa tgtttctttt ctgaatataa atataaatat gtgcaaagtt tgacttggat
                                                                      120
tgggattttg ttgagttctt caagcatctc ctaataccct caagggcctg agtagggggg
                                                                      180
aggaaaaagg actggaggtg gaatctttat aaaaaacaag agtgattgag gcagattgta
aacattatta aaaaacaaga aacaaacaaa aaaatagaga aaaaaaccac cccaacacac
                                                                      240
                                                                      300
aa
                                                                      302
      <210> 256
      <211> 301
      <212> DNA
      <213> Homo sapien
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<220>
      <221> misc_feature
      <222> (1)...(301)
      <223> n = A, T, C or G
      <400> 256
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aggaccetce tecceacace teaatecace aaaccateca taatgeacee agataggeee
                                                                        120
acceccaaaa geetggacae ettgageaca cagttatgae caggacagae teatetetat
                                                                        180
aggcaaatag ctgctggcaa actggcatta cctggtttgt ggggatgggg gggcaagtgt
                                                                        240
gtggcctctc ggcctggtta gcaagaacat tcagggtagg cctaagttan tcgtgttagt
                                                                        300
                                                                        301
      <210> 257
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 257
gttgtggagg aactctggct tgctcattaa gtcctactga ttttcactat cccctgaatt
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tccccactta tttttgtctt tcactatcgc aggccttaga agaggtctac ctgcctccag
                                                                        120
tcttacctag tccagtctac cccctggagt tagaatggcc atcctgaagt gaaaagtaat
                                                                        180
gtcacattac tecetteagt gatttettgt agaagtgeea atceetgaat gecaceaaga
                                                                        240
tottaatott cacatottta atottatoto tttgactoot otttacacog gagaaggoto
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                                                                        301
      <210> 258
      <211> 301
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(301)
      <223> n = A,T,C or G
      <400> 258
cagcagtagt agatgccgta tgccagcacg cccagcactc ccaggatcag caccagcacc
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aggggcccag ccaccaggcg cagaagcaag ataaacagta ggctcaagac cagagccacc
                                                                       120
cccagggcaa caagaatcca ataccaggac tgggcaaaat cttcaaagat cttaacactg
                                                                       180
atgtctcggg cattgaggct gtcaataana cgctgatccc ctgctgtatg gtggtgtcat
                                                                       240
tggtgatccc tgggagcgcc ggtggagtaa cgttggtcca tggaaagcag cgcccacaac
                                                                       300
                                                                       301
      <210> 259
      <211> 301
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(301)
      <223> n = A,T,C or G
      <400> 259
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tcatatatgc aaacaaatgc agactangcc tcaggcagag actaaaggac atctcttggg
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gtgtcctgaa gtgatttgga cccctgaggg cagacaccta agtaggaatc ccagtgggaa
                                                                        120
gcaaagccat aaggaagccc aggattcctt gtgatcagga agtgggccag gaaggtctgt
                                                                        180
tccagctcac atctcatctg catgcagcac ggaccggatg cgcccactgg gtcttggctt
                                                                        240
ccctcccatc ttctcaagca gtgtccttgt tgagccattt gcatccttgg ctccaggtgg
                                                                        300
                                                                        301
       <210> 260
       <211> 301
       <212> DNA
       <213> Homo sapien
      <400> 260
tttttttttt ccctaaggaa aaagaaggaa caagtctcat aaaaccaaat aagcaatggt
                                                                         60
aaggtgtctt aacttgaaaa agattaggag tcactggttt acaagttata attgaatgaa
                                                                        120
agaactgtaa cagccacagt tggccatttc atgccaatgg cagcaaacaa caggattaac
                                                                        180
tagggcaaaa taaataagtg tgtggaagcc ctgataagtg cttaataaac agactgattc
                                                                        240
actgagacat cagtacctgc ccgggcggcc gctcgagccg aattctgcag atatccatca
                                                                        300
C
                                                                        301
      <210> 261
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 261
aaatattcga gcaaatcctg taactaatgt gtctccataa aaggctttga actcagtgaa
                                                                        60
totgottoca tocacgatto tagcaatgac ototoggaca toaaagotoc tottaaggtt
                                                                       120
agcaccaact attccataca attcatcagc aggaaataaa ggctcttcag aaggttcaat
                                                                       180
ggtgacatcc aatttcttct gataatttag attcctcaca accttcctag ttaagtgaag
                                                                       240
ggcatgatga tcatccaaag cccagtggtc acttactcca gactttctgc aatgaagatc
                                                                       300
                                                                       301
      <210> 262
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 262
gaggagagec tgttacagca tttgtaagca cagaatactc caggagtatt tgtaattgtc
                                                                        60
tgtgagcttc ttgccgcaag tctctcagaa atttaaaaag atgcaaatcc ctgagtcacc
                                                                       120
cctagacttc ctaaaccaga tcctctgggg ctggaacctg gcactctgca tttgtaatga
                                                                       180
gggctttctg gtgcacacct aattttgtgc atctttgccc taaatcctgg attagtgccc
                                                                       240
catcattacc cccacattat aatgggatag attcagagca gatactctcc agcaaagaat
                                                                       300
                                                                       301
      <210> 263
      <211> 301
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(301)
      <223> n = A,T,C or G
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 aaaattacta cttaatccta attcacaata acaatggcat taaggtttga cttgagttgg
                                                                         120
 ttcttagtat tatttatggt aaataggctc ttaccacttg caaataactg gccacatcat
                                                                         180
 taatgactga cttcccagta aggctctcta aggggtaagt angaggatcc acaggatttg
                                                                         240
 agatgctaag gccccagaga tcgtttgatc caaccctctt attttcagag gggaaaatgg
                                                                         300
 g
                                                                         301
       <210> 264
       <211> 301
       <212> DNA
       <213> Homo sapien
       <400> 264
aaagacgtta aaccactcta ctaccacttg tggaactctc aaagggtaaa tgacaaascc
                                                                         60
aatgaatgac tctaaaaaca atatttacat ttaatggttt gtagacaata aaaaaacaag
                                                                        120
gtggatagat ctagaattgt aacattttaa gaaaaccata scatttgaca gatgagaaag
                                                                        180
ctcaattata gatgcaaagt tataactaaa ctactatagt agtaaagaaa tacatttcac
                                                                        240
accetteata taaatteact atettggett gaggeactee ataaaatgta teaegtgeat
                                                                        300
                                                                        301
       <210> 265
       <211> 301
       <212> DNA
      <213> Homo sapien
      <400> 265
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cttcttgtga cgcagtattt cttctctggg gagaagccgg gaagtcttct cctggctcta
catattettg gaagteteta atcaactttt gttecatttg ttteatttet teaggaggga
                                                                       120
ttttcagttt gtcaacatgt tctctaacaa cacttgccca tttctgtaaa gaatccaaag
                                                                       180
                                                                       240
cagtccaagg ctttgacatg tcaacaacca gcataactag agtatccttc agagatacgg
                                                                       300
                                                                       301
      <210> 266
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 266
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acaccagate actettteet etacceacag gettgetatg ageaagagae acaaceteet
                                                                       120
ctcttctgtg ttccagcttc ttttcctgtt cttcccaccc cttaagttct attcctgggg
                                                                       180
atagagacac caatacccat aacctetete etaageetee ttataaccca gggtgcacag
                                                                       240
cacagactee tgacaactgg taaggeeaat gaactgggag etcacagetg getgtgeetg
                                                                       300
а
                                                                       301
      <210> 267
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 267
aaagagcaca ggccagctca gcctgccctg gccatctaga ctcagcctgg ctccatgggg
                                                                       60
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gttctcagtg ctgagtccat ccaggaaaag ctcacctaga ccttctqaqq ctqaatcttc
                                                                        120
atcctcacag gcagcttctg agagcctgat attcctagcc ttgatggtct ggagtaaagc
                                                                        180
ctcattctga ttcctctct tcttttcttt caagttggct ttcctcacat ccctctgttc
                                                                        240
aattcgcttc agcttgtctg ctttagccct catttccaga agcttcttct ctttggcatc
                                                                        300
                                                                        301
      <210> 268
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 268
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gatcttggga gagctggttc ttctaaggag aaggaggaag gacagatgta actttqqatc
                                                                        120
tcgaagagga agtctaatgg aagtaattag tcaacggtcc ttgtttagac tcttggaata
                                                                        180
tgctgggtgg ctcagtgagc ccttttggag aaagcaagta ttattcttaa ggaqtaacca
                                                                       240
cttcccattg ttctactttc taccatcatc aattgtatat tatgtattct ttggagaact
                                                                       300
                                                                       301
      <210> 269
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 269
taacaatata cactagotat ottittaact giocatcatt agcaccaatg aagaitcaat
                                                                        60
aaaattacct ttattcacac atctcaaaac aattctgcaa attcttagtg aagtttaact
                                                                       120
atagtcacag accttaaata ttcacattgt tttctatgtc tactgaaaat aagttcacta
                                                                       180
cttttctgga tattctttac aaaatcttat taaaattcct qqtattatca ccccaatta
                                                                       240
tacagtagca caaccacctt atgtagtttt tacatgatag ctctgtagaa gtttcacatc
                                                                       300
t
                                                                       301
      <210> 270
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 270
cattgaagag cttttgcgaa acatcagaac acaagtgctt ataaaattaa ttaagcctta
                                                                        60
cacaagaata catattcctt ttatttctaa ggagttaaac atagatgtag ctgatgtgga
                                                                       120
gagcttgctg gtgcagtgca tattggataa cactattcat ggccgaattg atcaagtcaa
                                                                       180
ccaactcctt gaactggatc atcagaagaa gggtggtgca cgatatactg cactagataa
                                                                       240
tggaccaacc aactaaattc tctcaccagg ctgtatcagt aaactggctt aacagaaaac
                                                                       300
а
                                                                       301
      <210> 271
      <211> 301
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1) ... (301)
      <223> n = A,T,C or G
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<400> 271
  aaaaggttct cataagatta acaatttaaa taaatatttg atagaacatt ctttctcatt
  tttatagctc atctttaggg ttgatattca gttcatgctt cccttgctgt tcttgatcca
                                                                           60
 gaattgcaat cacttcatca gcctgtattc gctccaattc tctataaagt gggtccaagg
                                                                          120
 tgaaccacag agccacagca cacctettte cettggtgae tgeetteace ceatganggt
                                                                          180
 tctctcctcc agatganaac tgatcatgcg cccacatttt gggttttata gaagcagtca
                                                                          240
                                                                          300
                                                                          301
        <210> 272
        <211> 301
       <212> DNA
       <213> Homo sapien
       <400> 272
 taaattgcta agccacagat aacaccaatc aaatggaaca aatcactgtc ttcaaatgtc
 ttatcagaaa accaaatgag cctggaatct tcataatacc taaacatgcc gtatttagga
                                                                          60
 tccaataatt ccctcatgat gagcaagaaa aattctttgc gcacccctcc tgcatccaca
                                                                         120
 gcatcttctc caacaaatat aaccttgagt ggcttcttgt aatctatgtt ctttgttttc
                                                                         180
 ctaaggactt ccattgcatc tcctacaata ttttctctac gcaccactag aattaagcag
                                                                         240
                                                                         300
                                                                         301
       <210> 273
       <211> 301
       <212> DNA
       <213> Homo sapien
       <220>
       <221> misc_feature
       <222> (1)...(301)
       <223> n = A,T,C or G
       <400> 273
acatgtgtgt atgtgtatct ttgggaaaan aanaagacat cttgtttayt attttttgg
agagangctg ggacatggat aatcacwtaa tttgctayta tyactttaat ctgactygaa
                                                                         60
                                                                        120
gaaccgtcta aaaataaaat ttaccatgtc dtatattcct tatagtatgc ttatttcacc
ttytttctgt ccagagagag tatcagtgac ananatttma gggtgaamac atgmattggt
                                                                        180
gggacttnty tttacngagm accetgeeeg sgegeeeteg makengantt eegesanane
                                                                        240
                                                                        300
t
                                                                        301
      <210> 274
      <211> 301
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(301)
      \langle 223 \rangle n = A,T,C or G
      <400> 274
cttatatact ctttctcaga ggcaaaagag gagatgggta atgtagacaa ttctttgagg
aacagtaaat gattattaga gagaangaat ggaccaagga gacagaaatt aacttgtaaa
                                                                        60
tgattctctt tggaatctga atgagatcaa gaggccagct ttagcttgtg gaaaagtcca
                                                                       120
tctaggtatg gttgcattct cgtcttcttt tctgcagtag ataatgaggt aaccgaaggc
                                                                       180
aattgtgctt cttttgataa gaagctttct tggtcatatc aggaaattcc aganaaagtc
                                                                       240
                                                                       300
```

```
С
                                                                         301
      <210> 275
      <211> 301
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(301)
      <223> n = A, T, C or G
      <400> 275
tcggtgtcag cagcacgtgg cattgaacat tgcaatgtgg agcccaaacc acagaaaatg
                                                                         60
gggtgaaatt ggccaacttt ctattaactt atgttggcaa ttttgccacc aacagtaagc
                                                                        120
tggcccttct aataaaagaa aattgaaagg tttctcacta aacggaatta agtagtggag
                                                                        180
tcaagagact cccaggcctc agcgtacctg cccgggcggc cgctcgaagc cgaattctgc
                                                                        240
agatatecat cacactggeg gnegetegan catgeateta gaaggneeaa ttegeeetat
                                                                        300
                                                                        301
      <210> 276
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 276
tgtacacata ctcaataaat aaatgactgc attgtggtat tattactata ctgattatat
                                                                         60
ttatcatgtg acttctaatt agaaaatgta tccaaaagca aaacagcaga tatacaaaat
                                                                        120
taaagagaca gaagatagac attaacagat aaggcaactt atacattgag aatccaaatc
                                                                        180
caatacattt aaacatttgg gaaatgaggg ggacaaatgg aagccagatc aaatttgtgt
                                                                        240
aaaactattc agtatgtttc ccttgcttca tgtctgagaa ggctctcctt caatggggat
                                                                        300
g
                                                                       301
      <210> 277
      <211> 301
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(301)
      <223> n = A, T, C or G
      <400> 277
tttgttgatg tcagtatttt attacttgcg ttatgagtgc tcacctggga aattctaaag
                                                                        60
atacagagga cttggaggaa gcagagcaac tgaatttaat ttaaaagaag gaaaacattg
                                                                       120
gaatcatggc actcctgata ctttcccaaa tcaacactct caatgcccca ccctcgtcct
                                                                       180
caccatagtg gggagactaa agtggccacg fatttgcctt angtgtgcag tgcgttctqa
                                                                       240
gttcnctgtc gattacatct gaccagtctc ctttttccga agtccntccg ttcaatcttg
                                                                       300
C
                                                                       301
      <210> 278
      <211> 301
      <212> DNA
      <213> Homo sapien
```

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<220>
        <221> misc_feature
        <222> (1)...(301)
        \langle 223 \rangle n = A,T,C or G
        <400> 278
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                                                                           60
 aacatatcaa atgaaacagg gaaaatgaag ctgacaattt atggaagcca gggcttgtca
                                                                         120
 cagtetetae tgttattatg cattacetgg gaatttatat aageeettaa taataatgee
                                                                         180
 aatgaacatc tcatgtgtgc tcacaatgtt ctggcactat tataagtgct tcacaggttt
                                                                         240
 tatgtgttct tcgtaacttt atggantagg tactcggccg cgaacacgct aagccgaatt
                                                                         300
                                                                         301
       <210> 279
       <211> 301
       <212> DNA
       <213> Homo sapien
       <220>
       <221> misc_feature
       <222> (1)...(301)
       <223> n = A,T,C or G
       <400> 279
aaagcaggaa tgacaaagct tgcttttctg gtatgttcta ggtgtattgt gacttttact
gttatattaa ttgccaatat aagtaaatat agattatata tgtatagtgt ttcacaaagc
                                                                         60
                                                                         120
ttagacettt acettecage caceccacag tgettgatat tteagagtea gteattggtt
                                                                        180
atacatgtgt agttccaaag cacataagct agaanaanaa atatttctag ggagcactac
                                                                        240
catctgtttt cacatgaaat gccacacaca tagaactcca acatcaattt cattgcacag
                                                                        300
                                                                        301
       <210> 280
       <211> 301
       <212> DNA
      <213> Homo sapien
      <400> 280
ggtactggag ttttcctccc ctgtgaaaac gtaactactg ttgggagtga attgaggatg
                                                                         60
tagaaaggtg gtggaaccaa attgtggtca atggaaatag gagaatatgg ttctcactct
tgagaaaaaa acctaagatt agcccaggta gttgcctgta acttcagttt ttctgcctgg
                                                                        120
                                                                        180
gtttgatata gtttagggtt ggggttagat taagatctaa attacatcag gacaaagaga
                                                                        240
cagactatta actocacagt taattaagga ggtatgttoc atgtttattt gttaaagcag
                                                                        300
                                                                        301
      <210> 281
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 281
aggtacaaga aggggaatgg gaaagagctg ctgctgtggc attgttcaac ttggatattc
                                                                        60
gccgagcaat ccaaatcctg aatgaagggg catcttctga aaaaggagat ctgaatctca
                                                                       120
atgtggtage aatggettta tegggttata eggatgagaa gaaeteeett tggagagaaa
                                                                       180
tgtgtagcac actgcgatta cagctaaata acccgtattt gtgtgtcatg tttgcatttc
                                                                       240
```

```
tgacaagtga aacaggatct tacgatggag ttttgtatga aaacaaagtt gcagtacctc
                                                                         300
                                                                         301
       <210> 282
       <211> 301
       <212> DNA
       <213> Homo sapien
       <400> 282
caggitactac agaattaaaa tactgacaag caagtagiit citggcgigc acgaatigca
                                                                         60
tccagaaccc aaaaattaag aaattcaaaa agacattttg tgggcacctg ctagcacaga
                                                                        120
agcgcagaag caaagcccag gcagaaccat gctaacctta cagctcagcc tgcacagaag
                                                                        180
cgcagaagca aagcccaggc agaaccatgc taaccttaca gctcagcctg cacagaagcg
                                                                        240
cagaagcaaa gcccaggcag aacatgctaa ccttacagct cagcctgcac agaagcacag
                                                                        300
а
                                                                        301
      <210> 283
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 283
atctgtatac ggcagacaaa ctttatarag tgtagagagg tgagcgaaag gatgcaaaag
                                                                         60
cactttgagg gctttataat aatatgctgc ttgaaaaaaa aaatgtgtag ttgatactca
                                                                        120
gtgcatctcc agacatagta aggggttgct ctgaccaatc aggtgatcat tttttctatc
                                                                        180
acttcccagg ttttatgcaa aaattttgtt aaattctata atggtgatat gcatctttta
                                                                       240
ggaaacatat acatttttaa aaatctattt tatgtaagaa ctgacagacg aatttgcttt
                                                                        300
g
                                                                       301
      <210> 284
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 284
caggiacaaa acgciattaa giggciiaga attigaacai tigiggicii tattiactii
                                                                        60
gcttcgtgtg tgggcaaagc aacatcttcc ctaaatatat attaccaaga aaagcaagaa
                                                                       120
gcagattagg tttttgacaa aacaaacagg ccaaaagggg gctgacctgg agcagagcat
                                                                       180
ggtgagaggc aaggcatgag agggcaagtt tgttgtggac agatctgtgc ctactttatt
                                                                       240
actggagtaa aagaaaacaa agttcattga tgtcgaagga tatatacagt gttagaaatt
                                                                       300
а
                                                                       301
      <210> 285
      <211> 301
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(301)
      <223> n = A,T,C or G
      <400> 285
acatcaccat gatcggatcc cccacccatt atacgttgta tgtttacata aatactcttc
                                                                       60
aatgatcatt agtgttttaa aaaaaatact gaaaactcct tctgcatccc aatctctaac
                                                                       120
```

```
caggaaagca aatgctattt acagacctgc aagccctccc tcaaacnaaa ctatttctgg
                                                                        180
attaaatatg totgacttot tttgaggtoa cacgactagg caaatgotat ttacgatotg
                                                                        240
caaaagctgt ttgaagagtc aaagccccca tgtgaacacg atttctggac cctgtaacag
                                                                        300
t
                                                                        301
       <210> 286
       <211> 301
       <212> DNA
       <213> Homo sapien
      <400> 286
taccactgca ttccagcctg ggtgacagag tgagactccg tctccaaaaa aaactttgct
                                                                         60
tgtatattat ttttgcctta cagtggatca ttctagtagg aaaggacagt aagattttt
                                                                        120
atcaaaatgt gtcatgccag taagagatgt tatattcttt tctcatttct tccccaccca
                                                                        180
aaaataagct accatatagc ttataagtct caaatttttg ccttttacta aaatgtgatt
                                                                       240
gtttctgttc attgtgtatg cttcatcacc tatattaggc aaattccatt ttttcccttg
                                                                       300
t
                                                                       301
      <210> 287
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 287
tacagatctg ggaactaaat attaaaaatg agtgtggctg gatatatgga gaatgttggg
                                                                        60
cccagaagga acgtagagat cagatattac aacagctttg ttttgagggt tagaaatatg
                                                                       120
aaatgatttg gttatgaacg cacagtttag gcagcagggc cagaatcctg accctctgcc
                                                                       180
ccgtggttat ctcctcccca gcttggctgc ctcatgttat cacagtattc cattttgttt
                                                                       240
gttgcatgtc ttgtgaagcc atcaagattt tctcgtctgt tttcctctca ttggtaatgc
                                                                       300
                                                                       301
      <210> 288
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 288
gtacacctaa ctgcaaggac agctgaggaa tgtaatgggc agccgctttt aaagaagtag
                                                                        60
agtcaatagg aagacaaatt ccagttccag ctcagtctgg gtatctgcaa agctgcaaaa
                                                                       120
gatetttaaa gacaatttea agagaatatt teettaaagt tggcaatttg gagateatae
                                                                       180
aaaagcatct gcttttgtga tttaatttag ctcatctggc cactggaaga atccaaacag
                                                                       240
tctgccttaa ttttggatga atgcatgatg gaaattcaat aatttagaaa gttaaaaaaa
                                                                       300
                                                                       301
      <210> 289
      <211> 301
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(301)
      <223> n = A,T,C or G
      <400> 289
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ggtacactgt ttccatgtta tgtttctaca cattgctacc tcagtgctcc tggaaactta
                                                                         60
gcttttgatg tctccaagta gtccaccttc atttaactct ttgaaactgt atcatctttg
                                                                        120
ccaagtaaga gtggtggcct atttcagctg ctttgacaaa atgactggct cctgacttaa
                                                                        180
cgttctataa atgaatgtgc tgaagcaaag tgcccatggt ggcggcgaan aagagaaaga
                                                                        240
tgtgttttgt tttggactct ctgtggtccc ttccaatgct gtgggtttcc aaccagngga
                                                                        300
                                                                        301
       <210> 290
       <211> 301
       <212> DNA
       <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(301)
      <223> n = A, T, C or G
      <400> 290
acactgaget ettettgata aatatacaga atgettggea tatacaagat tetatactae
                                                                         60
tgactgatct gttcatttct ctcacagctc ttacccccaa aagcttttcc accctaagtg
                                                                        120
ttctgacctc cttttctaat cacagtaggg atagaggcag anccacctac aatgaacatg
                                                                        180
gagttetate aagaggeaga aacageacag aateceagtt ttaceatteg etageagtge
                                                                        240
tgccttgaac aaaaacattt ctccatgtct cattttcttc atgcctcaag taacagtgag
                                                                        300
а
                                                                        301
      <210> 291
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 291
caggtaccaa tttcttctat cctagaaaca tttcatttta tgttgttgaa acataacaac
                                                                        60
tatatcagct agattttttt tctatgcttt acctgctatg gaaaatttga cacattctgc
                                                                       120
tttactcttt tgtttatagg tgaatcacaa aatgtatttt tatgtattct gtagttcaat
                                                                       180
agccatggct gtttacttca tttaatttat ttagcataaa gacattatga aaaggcctaa
                                                                       240
acatgagett caetteecca etaactaatt ageatetgtt atttettaac egtaatgeet
                                                                       300
                                                                       301
      <210> 292
      <211> 301
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(301)
      <223> n = A,T,C or G
      <400> 292
accttttagt agtaatgtct aataataaat aagaaatcaa ttttataagg tccatatagc
                                                                        60
tgtattaaat aatttttaag tttaaaagat aaaataccat cattttaaat gttggtattc
                                                                       120
aaaaccaaag natataaccg aaaggaaaaa cagatgagac ataaaatgat ttgcnagatg
                                                                       180
ggaaatatag tasttyatga atgttnatta aattccagtt ataatagtgg ctacacactc
                                                                       240
tcactacaca cacagacccc acagtcctat atgccacaaa cacatttcca taacttgaaa
                                                                       300
                                                                       301
```

```
<210> 293
        <211> 301
        <212> DNA
       <213> Homo sapien
       <400> 293
 ggtaccaagt gctggtgcca gcctgttacc tgttctcact gaaaagtctg gctaatgctc
                                                                          60
 ttgtgtagtc acttctgatt ctgacaatca atcaatcaat ggcctagagc actgactgtt
                                                                         120
 aacacaaacg tcactagcaa agtagcaaca gctttaagtc taaatacaaa gctgttctgt
                                                                         180
 gtgagaattt tttaaaaggc tacttgtata ataacccttg tcatttttaa tgtacctcgg
                                                                         240
 ccgcgaccac gctaagccga attctgcaga tatccatcac actggcggcc gctcgagcat
                                                                         300
                                                                         301
       <210> 294
       <211'> 301
       <212> DNA
       <213> Homo sapien
       <220>
       <221> misc_feature
       <222> (1)...(301)
       \langle 223 \rangle n = A,T,C or G
       <400> 294
tgacccataa caatatacac tagctatctt tttaactgtc catcattagc accaatgaag
                                                                         60
attcaataaa attaccttta ttcacacatc tcaaaacaat tctgcaaatt cttagtgaag
tttaactata gtcacaganc ttaaatattc acattgtttt ctatgtctac tgaaaataag
                                                                        120
                                                                        180
ttcactactt ttctgggata ttctttacaa aatcttatta aaattcctgg tattatcacc
                                                                        240
cccaattata cagtagcaca accaccttat gtagttttta catgatagct ctgtagaggt
                                                                        300
                                                                        301
      <210> 295
      <211> 305
      <212> DNA
      <213> Homo sapien
      <400> 295
gtactctttc tctcccctcc tctgaattta attctttcaa cttgcaattt gcaaggatta
                                                                         60
cacatttcac tgtgatgtat attgtgttgc aaaaaaaaa gtgtctttgt ttaaaattac
                                                                        120
ttggtttgtg aatccatctt gctttttccc cattggaact agtcattaac ccatctctga
                                                                        180
actggtagaa aaacrtctga agagctagtc tatcagcatc tgacaggtga attggatggt
tctcagaacc atttcaccca gacagcctgt ttctatcctg tttaataaat tagtttgggt
                                                                        240
                                                                        300
tctct
                                                                        305
      <210> 296
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 296
aggtactatg ggaagctgct aaaataatat ttgatagtaa aagtatgtaa tgtgctatct
                                                                        60
cacctagtag taaactaaaa ataaactgaa actttatgga atctgaagtt attttccttg
                                                                       120
attaaataga attaataaac caatatgagg aaacatgaaa ccatgcaatc tactatcaac
                                                                       180
tttgaaaaag tgattgaacg aaccacttag ctttcagatg atgaacactg ataagtcatt
                                                                       240
```

```
tgtcattact ataaatttta aaatctgtta ataagatggc ctatagggag gaaaaagggg
                                                                         300
                                                                         301
       <210> 297
       <211> 300
       <212> DNA
       <213> Homo sapien
       <220>
       <221> misc_feature
       <222> (1)...(300)
       <223> n = A,T,C or G
       <400> 297
 actgagtttt aactggacgc caagcaggca aggctggaag gttttgctct ctttgtgcta
                                                                         60
 aaggttttga aaaccttgaa ggagaatcat tttgacaaga agtacttaag agtctagaga
                                                                         120
 acaaagangt gaaccagctg aaagctctcg ggggaanctt acatgtgttg ttaggcctgt
                                                                        180
 tccatcattg ggagtgcact ggccatccct caaaatttgt ctgggctggc ctgagtggtc
                                                                        240
 accgcacctc ggccgcgacc acgctaagcc gaattctgca gatatccatc acactggcgg
                                                                        300
       <210> 298
       <211> 301
       <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(301)
      <223> n = A,T,C or G
      <400> 298
tatggggttt gtcacccaaa agctgatgct gagaaaggcc tccctggggc ccctcccgcg
                                                                         60
ggcatctgag agacctggtg ttccagtgtt tctggaaatg ggtcccagtg ccgccggctg
                                                                       120
tgaagetete agateaatea egggaaggge etggeggtgg tggeeacetg gaaceaceet
                                                                       180
gtcctgtctg tttacatttc actaycaggt tttctctggg cattacnatt tgttccccta
                                                                       240
caacagtgac ctgtgcattc tgctgtggcc tgctgtgtct gcaggtggct ctcagcgagg
                                                                       300
                                                                       301
      <210> 299
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 299
gttttgagac ggagtttcac tcttgttgcc cagactggac tgcaatggca gggtctctgc
                                                                        60
tcactgcacc ctctgcctcc caggttcgag caattctcct gcctcagcct cccaggtagc
                                                                       120
tgggattgca ggctcacgcc accataccca gctaattttt ttgtattttt agtagagacg
                                                                       180
gagtttcgcc atgttggcca gctggtctca aactcctgac ctcaagcgac ctgcctgcct
                                                                       240
cggcctccca aagtgctgga attataggca tgagtcaaca cgcccagcct aaagatattt
                                                                       300
                                                                       301
      <210> 300
      <211> 301
     <212> DNA
     <213> Homo sapien
```

```
<400> 300
 attcagtttt atttgctgcc ccagtatctg taaccaggag tgccacaaaa tcttgccaga
                                                                         60
 tatgtcccac acccactggg aaaggctccc acctggctac ttcctctatc agctgggtca
                                                                        120
 gctgcattcc acaaggttct cagcctaatg agtttcacta cctgccagtc tcaaaactta
                                                                        180
 gtaaagcaag accatgacat tececeaegg aaatcagagt ttgeeceaee gtettgttae
                                                                        240
 tataaagcct gcctctaaca gtccttgctt cttcacacca atcccgagcg catccccat
                                                                        300
                                                                        301
       <210> 301
       <211> 301
       <212> DNA
       <213> Homo sapien
       <400> 301
ttaaattttt gagaggataa aaaggacaaa taatctagaa atgtgtcttc ttcagtctgc
                                                                         60
agaggacccc aggtctccaa gcaaccacat ggtcaagggc atgaataatt aaaagttggt
                                                                        120
gggaactcac aaagaccctc agagctgaga cacccacaac agtgggagct cacaaagacc
                                                                        180
ctcagagetg agacacecae aacagtggga geteacaaag acceteagag etgagacace
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cacaacagca cctcgttcag ctgccacatg tgtgaataag gatgcaatgt ccagaagtgt
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       <210> 302
       <211> 301
       <212> DNA
       <213> Homo sapien
       <400> 302
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tgaattttga aaattactac ttaatcctaa ttcacaataa caatggcatt aaggtttgac
                                                                       120
ttgagttggt tcttagtatt atttatggta aataggctct taccacttgc aaataactgg
                                                                       180
ccacatcatt aatgactgac ttcccagtaa ggctctctaa ggggtaagta ggaggatcca
                                                                       240
caggatttga gatgctaagg ccccagagat cgtttgatcc aaccctctta ttttcagagg
                                                                       300
g
                                                                       301
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tggctaatgg aactaccgct tgcatgttaa aaatggtggt ttgtgaaatg atcataggcc
                                                                       180
agtaacgggt atgtttttct aactgatctt ttgctcgttc caaagggacc tcaagacttc
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catcgatttt atatctgggg tctagaaaag gagttaatct gttttccctc ataaattcac
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C
                                                                      301
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tattagtttc agtttcagct tacccacttt ttgtctgcaa catgcaraas agacagtgcc
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 ctttttagtg tatcatatca ggaatcatct cacattggtt tgtgccatta ctggtgcagt
                                                                         180
 gactttcagc cacttgggta aggtggagtt ggccatatgt ctccactgca aaattactga
                                                                         240
 ttttcctttt gtaattaata agtgtgtgtg tgaagattct ttgagatgag gtatatatct
                                                                         300
                                                                         301
       <210> 305
       <211> 301
       <212> DNA
       <213> Homo sapien
       <220>
       <221> misc_feature
       <222> (1)...(301)
       <223> n = A, T, C or G
       <400> 305
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cagggggaca gacctggaca gacacgttgt catttgctgc tgtgggtagg aaaatgggcg
                                                                        120
taaaggagga gaaacagata caaaatctcc aactcagtat taaggtattc tcatgcctag
                                                                        180
aatattggta gaaacaagaa tacattcata tggcaaataa ctaaccatgg tggaacaaaa
                                                                        240
ttctgggatt taagttggat accaangaaa ttgtattaaa agagctgttc atggaataag
                                                                        300
                                                                        301
      <210> 306
      <211> 8
      <212> PRT
      <213> Homo sapien
      <400> 306
Val Leu Gly Trp Val Ala Glu Leu
      <210> 307
      <211> 637
      <212> DNA
      <213> Homo sapien
      <400> 307
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ttgtgatcag gtggtctatg gggcttatcc ctacaaagaa gaatccagaa ataggggcac
                                                                       120
attgaggaat gatacttgag cccaaagagc attcaatcat tgttttattt gccttmtttt
                                                                       180
cacaccattg gtgagggagg gattaccacc ctggggttat gaagatggtt gaacacccca
                                                                       240
cacatagcac eggagatatg agateaacag tttettagee atagagatte acageceaga
                                                                       300
gcaggaggac gcttgcacac catgcaggat gacatggggg atgcgctcgg gattggtgtg
                                                                       360
aagaagcaag gactgttaga ggcaggcttt atagtaacaa gacggtgggg caaactctga
                                                                       420
tttccgtggg ggaatgtcat ggtcttgctt tactaagttt tgagactggc aggtagtgaa
                                                                       480
actcattagg ctgagaacct tgtggaatgc acttgaccca sctgatagag gaagtagcca
                                                                       540
ggtgggagcc tttcccagtg ggtgtgggac atatctggca agattttgtg gcactcctgg
                                                                       600
ttacagatac tggggcagca aataaaactg aatcttg
                                                                       637
      <210> 308
      <211> 647
      <212> DNA
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<213> Homo sapien

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<220>
       <221> misc_feature
       <222> (1)...(647)
       <223> n = A,T,C \text{ or } G
       <400> 308
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 tgctcagggg aaggttcata tgggactttc tactgcccaa ggttctatac aggatataaa
                                                                        120
 ggngcctcac agtatagatc tggtagcaaa gaagaagaaa caaacactga tctctttctg
 ccacccctct gaccctttgg aactcctctg accctttaga acaagcctac ctaatatctg
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 ctagagaaaa gaccaacaac ggcctcaaag gatctcttac catgaaggtc tcagctaatt
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                                                                        300
 cttggctaag atgtgggttc cacattaggt tctgaatatg gggggaaggg tcaatttgct
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 cattttgtgt gtggataaag tcaggatgcc caggggccag agcagggggc tgcttgcttt
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gggaacaatg gctgagcata taaccatagg ttatggggaa caaaacaaca tcaaagtcac
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tgtatcaatt gccatgaaga cttgagggac ctgaatctac cgattcatct taaggcagca
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ggaccagttt gagtggcaac aatgcagcag cagaatcaat ggaaacaaca gaatgattgc
                                                                        600
aatgteettt ttttteteet gettetgaet tgataaaagg ggaeegt
                                                                        647
       <210> 309
       <211> 460
       <212> DNA
       <213> Homo sapien
       <400> 309
actttatagt ttaggctgga cattggaaaa aaaaaaaagc cagaacaaca tgtgatagat
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aatatgattg gctgcacact tccagactga tgaatgatga acgtgatgga ctattgtatg
gagcacatct tcagcaagag ggggaaatac tcatcatttt tggccagcag ttgtttgatc
                                                                        120
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accaaacatc atgccagaat actcagcaaa ccttcttagc tcttgagaag tcaaagtccg
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ggggaattta ttcctggcaa ttttaattgg actccttatg tgagagcagc ggctacccag
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ctggggtggt ggagcgaacc cgtcactagt ggacatgcag tggcagagct cctggtaacc
                                                                       360
acctagagga atacacaggc acatgtgtga tgccaagcgt gacacctgta gcactcaaat
                                                                       420
ttgtcttgtt tttgtctttc ggtgtgtaag attcttaagt
                                                                       460
      <210> 310
      <211> 539
      <212> DNA
      <213> Homo sapien
      <400> 310
acgggactta tcaaataaag ataggaaaag aagaaaactc aaatattata ggcagaaatg
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ctaaaggttt taaaatatgt caggattgga agaaggcatg gataaagaac aaagttcagt
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taggaaagag aaacacagaa ggaagagaca caataaaagt cattatgtat tctgtgagaa
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gtcagacagt aagatttgtg ggaaatgggt tggtttgttg tatggtatgt attttagcaa
                                                                       240
taatctttat ggcagagaaa gctaaaatcc tttagcttgc gtgaatgatc acttgctgaa
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ttcctcaagg taggcatgat gaaggaggt ttagaggaga cacagacaca atgaactgac
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ctagatagaa agccttagta tactcagcta ggaatagtga ttctgagggc acactgtgac
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atgattatgt cattacatgt atggtagtga tggggatgat aggaaggaag aacttatggc
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atattttcac ceccacaaaa gteagttaaa tattgggaca etaaceatee aggteaaga
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      <210> 311
      <211> 526
      <212> DNA
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<213> Homo sapien

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<220>
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        <222> (1)...(526)
        <223> n = A,T,C or G
        <400> 311
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 ttttgacgtt ttctctaaac tactaaagag gcattaatga tccataaatt atattatcta
                                                                          60
 catttacage atttaaaatg tgttcagcat gaaatattag ctacagggga agctaaataa
                                                                         120
 attaaacatg gaataaagat ttgtccttaa atataatcta caagaagact ttgatatttg
                                                                         180
 tttttcacaa gtgaagcatt cttataaagt gtcataacct ttttggggaa actatgggaa
                                                                         240
                                                                         300
 aaaatgggga aactetgaag ggttttaagt atettacetg aagetacaga etccataace
 tctctttaca gggagctcct gcagccccta cagaaatgag tggctgagat tcttgattgc
                                                                         360
 acagcaagag cttctcatct aaaccctttc cctttttagt atctgtgtat caagtataaa
                                                                         420
                                                                         480
 agttctataa actgtagtnt acttatttta atccccaaag cacagt
                                                                        526
       <210> 312
       <211> 500
       <212> DNA
       <213> Homo sapien
       <220>
       <221> misc_feature
       <222> (1)...(500)
       <223> n = A,T,C or G
       <400> 312
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tcatttctga aagcagttga gccactttat tccaaagtac actgcagatg ttcaaactct
ccatttctct ttcccttcca cctgccagtt ttgctgactc tcaacttgtc atgagtgtaa
                                                                        120
                                                                       180
gcattaagga cattatgctt cttcgattct gaagacaggc cctgctcatg gatgactctg
gcttcttagg aaaatatttt tcttccaaaa tcagtaggaa atctaaactt atcccctctt
                                                                       240
tgcagatgtc tagcagcttc agacatttgg ttaagaaccc atgggaaaaa aaaaaatcct
                                                                       300
                                                                       360
tgctaatgtg gtttcctttg taaaccanga ttcttatttg nctggtatag aatatcaget
                                                                       420
ctgaacgtgt ggtaaagatt tttgtgtttg aatataggag aaatcagttt gctgaaaagt
                                                                       480
tagtcttaat tatctattgg
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      <210> 313
      <211> 718
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(718)
      <223> n = A,T,C or G
      <400> 313
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tgatgataca gaggtgagaa ataagaaagg ctgctgactt taccatctga ggccacacat
                                                                      120
ctgctgaaat ggagataatt aacatcacta gaaacagcaa gatgacaata taatgtctaa
                                                                      180
gtagtgacat gtttttgcac atttccagcc cttttaaata tccacacaca caggaagcac
aaaaggaagc acagagatcc ctgggagaaa tgcccggccg ccatcttggg tcatcgatga
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gcctcgccct gtgcctgntc ccgcttgtga gggaaggaca ttagaaaatg aattgatgtg
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                                                                      360
ttccttaaag gatggcagga aaacagatcc tgttgtggat atttatttga acgggattac
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agatttgaaa tgaagtcaca aagtgagcat taccaatgag aggaaaacag acgagaaaat
 cttgatggtt cacaagacat gcaacaaaca aaatggaata ctgtgatgac acgagcagcc
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 aactggggag gagataccac ggggcagagg tcaggattct ggccctgctg cctaactgtg
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 cgttatacca atcatttcta tttctaccct caaacaagct gtngaatatc tgacttacgg
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 ttcttntggc ccacattttc atnatccacc contentttt aannttantc caaantgt
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       <211> 358
       <212> DNA
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 caacatgtgt agatctcttg tcttattctt ttgtctataa tactgtattg tgtagtccaa
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 geteteggta gtecageeae tgtgaaacat geteeettta gattaaeete gtggaegete
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 ttgttgtatt gctgaactgt agtgccctgt attttgcttc tgtctgtgaa ttctgttgct
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 tctggggcat ttccttgtga tgcagaggac caccacacag atgacagcaa tctgaatt
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                                                                        358
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       <211> 341
       <212> DNA
       <213> Homo sapien
       <400> 315
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ataggtgatg atgaggacat ggaatgggcc cccaaggatg gtctgtccaa agaagcgagt
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gacccccatt ctgaagatgt ctggaacctc taccagcagg atgatgatag ccccaatgac
agtcaccage teccegacca geeggatate gteettaggg gteatgtagg etteetgaag
                                                                        180
tagettetge tgtaagaggg tgttgteeeg ggggetegtg eggttattgg teetgggett
                                                                        240
gagggggggg tagatgcagc acatggtgaa gcagatgatg t
                                                                        300
                                                                       341
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      <211> 151
      <212> DNA
      <213> Homo sapien
      <400> 316
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tgtgggcctt tctcgagttt ctgattataa acaccactgg agcgatgtgt tgactggact
                                                                        60
                                                                       120
cattcaggga gctctggttg caatattagt t
                                                                       151
      <210> 317
      <211> 151
      <212> DNA
      <213> Homo sapien
      <400> 317
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                                                                       60
atcttcattt atctctggcc ttaaccctgg ctcctgaggc tgcggccagc agatcccagg
                                                                       120
ccagggctct gttcttgcca cacctgcttg a
                                                                       151
      <210> 318
      <211> 151
      <212> DNA
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<213> Homo sapien <400> 318 actggtggga ggcgctgttt agttggctgt tttcagaggg gtctttcgga gggacctcct 60 gctgcaggct ggagtgtctt tattcctggc gggagaccgc acattccact gctgaggctg 120 tgggggcggt ttatcaggca gtgataaaca t 151 <210> 319 <211> 151 <212> DNA <213> Homo sapien <400> 319 aactagtgga tccagagcta taggtacagt gtgatctcag ctttgcaaac acattttcta 60 catagatagt actaggtatt aatagatatg taaagaaaga aatcacacca ttaataatgg 120 taagattggg tttatgtgat tttagtgggt a 151 <210> 320 <211> 150 <212> DNA <213> Homo sapien <400> 320 aactagtgga tccactagtc cagtgtggtg gaattccatt gtgttggggt tctagatcgc 60 120 gagtgttcta cagcttacag taaataccat 150 <210> 321 <211> 151 <212> DNA <213> Homo sapien <400> 321 agcaactttg tttttcatcc aggttatttt aggcttagga tttcctctca cactgcagtt 60 tagggtggca ttgtaaccag ctatggcata ggtgttaacc aaaggctgag taaacatggg 120 tgcctctgag aaatcaaagt cttcatacac t 151 <210> 322 <211> 151 <212> DNA <213> Homo sapien <220> <221> misc_feature <222> (1)...(151) <223> n = A,T,C or G<400> 322 atccagcate ttetectgtt tettgeette ettttette ttettasatt etgettgagg 60 tttgggcttg gtcagtttgc cacagggctt ggagatggtg acagtcttct ggcattcggc 120 attgtgcagg gctcgcttca nacttccagt t 151 <210> 323 <211> 151 <212> DNA

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<213> Homo sapien
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        <222> (1)...(151)
        <223> n = A, T, C or G
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 nagactcant tactacccag tttgtggttt twtgggagaa atgtaactgg acagttagct
                                                                          60
                                                                         120
 gttcaatyaa aaagacactt ancccatgtg g
                                                                         151
        <210> 324
        <211> 461
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       <220>
       <221> misc_feature
       <222> (1)...(461)
       <223> n = A,T,C or G
       <400> 324
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                                                                         60
 agagttacta cgaatcccat cttggttcca gctatatcac tgacagcatg gtagaagact
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gcgaacctca cttctagact ttcacggtgg gacgaaacgg gttcagaaac tgccaggggc
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ctcatacagg gatatcaaaa taccctttgt gctacccagg ccctggggaa tcaggtgact
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cacacaaatg caatagttgg tcactgcatt tttacctgaa ccaaagctaa acccggtgtt
gccaccatgc accatggcat gccagagttc aacactgttg ctcttgaaaa ttgggtctga
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aaaaacgcac aagagcccct gccctgccct agctgangca c
                                                                        420
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agtaagagtg gtggcctatt tcagctgctt tgacaaaatg actggctcct gacttaacgt
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tctataaatg aatgtgctga agcaaagtgc ccatggtggc ggcgaagaag agaaagatgt
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gttttgtttt ggactctctg tggtcccttc caatgctgtg ggtttccaac caggggaagg
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gtcccttttg cattgccaag tgccataacc atgagcacta cgctaccatg gttctgcctc
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      <211> 1215
      <212> DNA
      <213> Homo sapien
      <400> 326
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                                                                       60
                                                                       120
gaactcctac accatcgggc tgggcctgca cagtcttgag gccgaccaag agccagggag
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ccagatggtg gaggccagcc tctccgtacg gcacccagag tacaacagac ccttgctcgc
                                                                   240
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                                                                   420
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cggagggcaa gaccagaagg actcctgcaa cggtgactct ggggggcccc tgatctgcaa
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cgggtacttg cagggccttg tgtctttcgg aaaagccccg tgtggccaag ttggcgtgcc
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aggigietac accaaccici gcaaaticac igagiggata gagaaaaccg iccaggccag
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ttaactctgg ggactgggaa cccatgaaat tgacccccaa atacatcctg cggaaggaat
                                                                   660
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tcaggaatat ctgttcccag cccctcctcc ctcaggccca ggagtccagg cccccagccc
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agacceccca geceetecte ceteagacee aggagtecag eccetectee eteagaceea
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cctccctcag actcagaggt ccaagccccc aacccctcct tccccagacc cagaggtcca
                                                                   960
ggtcccagcc cetectecet cagacccage ggtccaatge cacetagact etecetgtac
                                                                  1020
acagtgccc cttgtggcac gttgacccaa ccttaccagt tggtttttca ttttttgtcc
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1140
                                                                 1200
aaaaaaaaa aaaaa
                                                                 1215
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<210> 327

<211> 220

<212> PRT

<213> Homo sapien

<400> 327

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<210> 328

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                                                                        234
       <210> 329
       <211> 77
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       <213> Homo sapien
       <400> 329
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  1
                  5
 Pro His Ser Gln Pro Trp Gln Ala Ala Leu Val Met Glu Asn Glu Leu
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 Phe Cys Ser Gly Val Leu Val His Pro Gln Trp Val Leu Ser Ala Thr
                             40
His Cys Phe Gln Asn Ser Tyr Thr Ile Gly Leu Gly Leu His Ser Leu
                         55
Glu Ala Asp Gln Glu Pro Gly Ser Gln Met Val Glu Ala
                     70
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      <211> 70
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                                                                        70
      <210> 331
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Gly Val Met Met Cys Pro Tyr Ser Lys Thr Ala Asp Gly Phe Glu Met
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His Ile Gly Val Asn His Leu Gly His Phe Leu Leu Thr His Leu Leu

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145
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                                            155
                                                                160
  Leu Glu Lys Leu Lys Glu Ser Ala Pro Ser Arg Ile Val Asn Val Ser
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  Ser Leu Ala His His Leu Gly Arg Ile His Phe His Asn Leu Gln Gly
                                   185
  Glu Lys Phe Tyr Asn Ala Gly Leu Ala Tyr Cys His Ser Lys Leu Ala
                               200
  Asn Ile Leu Phe Thr Gln Glu Leu Ala Arg Arg Leu Lys Gly Ser Gly
                           215
                                               220
  Val Thr Thr Tyr Ser Val His Pro Gly Thr Val Gln Ser Glu Leu Val
                      230
                                           235
  Arg His Ser Ser Phe Met Arg Trp Met Trp Trp Leu Phe Ser Phe Phe
                  245
                                       250
  Ile Lys Thr Pro Gln Gln Gly Ala Gln Thr Ser Leu His Cys Ala Leu
                                   265
  Thr Glu Gly Leu Glu Ile Leu Ser Gly Asn His Phe Ser Asp Cys His
          275
                              280
                                                   285
  Val Ala Trp Val Ser Ala Gln Ala Arg Asn Glu Thr Ile Ala Arg Arg
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                                               300
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                                                                         120
 ctcctgctgc aggctggagt gtctttattc ctggcgggag accgcacatt ccactgctga
                                                                         180
 ggttgtgggg gcggtttatc aggcagtgat aaacataaga tgtcatttcc ttgactccgg
 ccttcaattt tctctttggc tgacgacgga gtccgtggtg tcccgatgta actgacccct
                                                                        240
                                                                        300
 gctccaaacg tgacatcact gatgctcttc tcgggggtgc tgatggcccg cttggtcacg
 tgctcaatct cgccattcga ctcttgctcc aaactgtatg aagacacctg actgcacgtt
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                                                                        480
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gctgccttac aagtattaaa tattttactt ctttccataa agagtagctc aaaatatgca
                                                                        120
attaatttaa taatttetga tgatggtttt atetgeagta atatgtatat catetattag
                                                                        180
aatttactta atgaaaaact gaagagaaca aaatttgtaa ccactagcac ttaagtactc
                                                                        240
                                                                        300
ctgattctta acattgtctt taatgaccac aagacaacca acag
                                                                        344
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 cctggcaggt aaaccaatgc caagagagtg atggaaacca ttggcaagac tttgttgatg
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 accaggattg gaattttata aaaatattgt tgatgggaag ttgctaaagg gtgaattact
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tccctcagaa gagtgtaaag aaaagtcaga gatgctataa tagcagctat tttaattggc
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 aagtgccact gtggaaagag ttcctgtgtg tgctgaagtt ctgaagggca gtcaaattca
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tcagcatggg ctgtttggtg caaatgcaaa agcacaggtc tttttagcat gctggtctct
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cccgtgtcct tatgcaaata atcgtcttct tctaaatttc tcctaggctt cattttccaa
                                                                        480
agttcttctt ggtttgtgat gtcttttctg ctttccatta attctataaa atagtatggc
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                                                                       120
cttgtaactc tectttetec tttetteece tttetetgee egeettteec atectgetgt
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agacttettg attgteagte tgtgteacat ceagtgattg ttttggttte tgtteettt
                                                                       240
ctgactgccc aaggggctca gaaccccagc aatcccttcc titcactacc ttctttttg
                                                                       300
ggggtagttg gaagggactg aaattgtggg gggaaggtag gaggcacatc aataaagagg
                                                                       360
aaaccaccaa gctgaaaaaa aa
                                                                       382
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gtttaggggg atgccaagga taaggccagc tcagttatat gaagagaagc agaacaaaca
                                                                       180
agtettteag agaaatggat geaateagag tgggateeeg gteacateaa ggteacaete
                                                                       240
caccttcatg tgcctgaatg gttgccaggt cagaaaaatc cacccttac gagtgcggct
                                                                       300
tegacectat atecceegee egegteeett tetecataaa attettetta gtagetatta
                                                                       360
ccttcttatt atttgatcta gaaattgccc tccttttacc cctaccatga gccctacaaa
                                                                       420
caactaacct gccactaata gttatgtcat ccctcttatt aatcatcatc ctagccctaa
                                                                       480
gtctggccta tgagtgacta caaaaaggat tagactgagc cgaataacaa aaaaaa
                                                                       536
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                                                                      120
gcgtgggcca ggaaatcaca tcctacactg cccaggagcc agacacattt atggaacaga
                                                                      180
aaataacata tcggatttgg agagacactg ccaactggct ggagattaat ccggacactg
                                                                      240
gtgccatttc c
                                                                      251
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<210> 346
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        <221> misc_feature
        <222> (1)...(282)
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  ctaagtcttg ttaccaaaaa aaggaaaaag aaaagatctt ctcagttaca aattctggga
                                                                          60
 agggagacta tacctggctc ttgccctaag tgagaggtct tccctcccgc accaaaaaat
                                                                         120
 agaaaggctt tctatttcac tggcccaggt agggggaagg agagtaactt tgagtctgtg
                                                                         180
 ggtctcattt cccaaggtgc cttcaatgct catnaaaacc aa
                                                                         240
                                                                         282
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        <211> 201
        <212> DNA
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       <220>
       <221> misc_feature
       <222> (1)...(201)
       <223> n = A,T,C or G
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 taaatataac ttttaaaana ntactancag cttttaccta ngctcctaaa tgcttgtaaa
                                                                         60
 tetgagaetg aetggaecca eccagaecca gggeaaagat acatgttace atateatett
                                                                        120
                                                                        180
 tataaagaat tttttttgt c
                                                                        201
       <210> 348
       <211> 251
       <212> DNA
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       <400> 348
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agagagaaca gtgccagaat gaaactgacc ctaagtccca ggtgcccctg ggcaggcaga
                                                                        60
aggagacact cccagcatgg aggagggttt atctttcat cctaggtcag gtctacaatg
                                                                        120
ggggaaggtt ttattataga actoccaaca goodacotca otoctgocac coaccogatg
                                                                        180
                                                                       240 .
gccctgcctc c
                                                                       251
      <210> 349
      <211> 251
      <212> DNA
      <213> Homo sapien
      <400> 349
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aacccctgag gatgccagag ctatgggtcc agaacatggt gtggtattat caacagagtt
                                                                        60
cagaagggtc tgaactctac gtgttaccag agaacataat gcaattcatg cattccactt
                                                                       120
agcaattttg taaaatacca gaaacagacc ccaagagtct ttcaagatga ggaaaattca
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actcctggtt t
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 agecegeeg gtgaageteg etgettteee taceteetta agtgaetgee aaaegeecae
                                                                         120
 cggctggaat tgctctggtt atgatgacag agaaaatgat ctcttcctct gtgacaccaa
 cacctgtaaa tttgatgggg aatgtttaag aattggagac actgtgactt gcgtctgtca
                                                                         180
 gttcaagtgc aacaatgact atgtgcctgt gtgtggctcc aatggggaga gctaccagaa
                                                                         240
                                                                        300
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 aggatcatgt gccacagtcc atgaaggctc tggagaaact agtcaaaagg agacatccac
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 ctgtgatatt tgccagtttg gtgcagaatg tgacgaagat gccgaggatg tctggtgtgt
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 ttatgataat gcatgccaaa tcaaagaagc atcgtgtcag aaacaggaga aaattgaagt
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 ttatgcaaga acagattatg cagagaatgc taacaaatta gaagaaagtg ccagagaaca
                                                                        660
 ccacatacct tgtccggaac attacaatgg cttctgcatg catgggaagt gtgagcattc
                                                                        720
 tatcaatatg caggagccat cttgcaggtg tgatgctggt tatactggac aacactgtga
                                                                        780
 aaaaaaggac tacagtgttc tatacgttgt tcccggtcct gtacgatttc agtatgtctt
                                                                        840
                                                                        900
aatcgcag
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       <211> 472
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gtcaaacctt aatgccattg ttattgtgaa ttaggattaa gtagtaattt tcaaaattca
                                                                        60
                                                                       120
cattaacttg attttaaaat cagwtttgyg agtcatttac cacaagctaa atgtgtacac
tatgataaaa acaaccattg tattcctgtt tttctaaaca gtcctaattt ctaacactgt
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                                                                       240
atatateett egacateaat gaactttgtt ttettttaet eeagtaataa agtaggeaca
                                                                       300
gatctgtcca caacaaactt gccctctcat gccttgcctc tcaccatgct ctgctccagg
                                                                       360
tcagccccct tttggcctgt ttgttttgtc aaaaacctaa tctgcttctt gcttttcttg
                                                                       420
gtaatatata tttagggaag atgttgcttt gcccacacac gaagcaaagt aa
                                                                       472
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      <212> DNA
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                                                                      120
caggetgegt teegteetta egatgaagae caegatgeag tttecaaaca ttgecaetae
atacatggaa aggagggga agccaaccca gaaatgggct ttctctaatc ctgggatacc
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                                                                      240
aataagcaca a
                                                                      251
     <210> 353
     <211> 436
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<213> Homo sapien

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  cacattatgg tattattact atactgatta tatttatcat gtgacttcta attaraaaat
                                                                          60
  gtatccaaaa gcaaaacagc agatatacaa aattaaagag acagaagata gacattaaca
                                                                         120
  gataaggcaa cttatacatt gacaatccaa atccaataca tttaaacatt tgggaaatga
                                                                         180
  gggggacaaa tggaagccar atcaaatttg tgtaaaacta ttcagtatgt ttcccttgct
                                                                         240
  tcatgtctga raaggctctc ccttcaatgg ggatgacaaa ctccaaatgc cacacaaatg
                                                                         300
  ttaacagaat actagattca cactggaacg ggggtaaaga agaaattatt ttctataaaa
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  gggctcctaa tgtagt
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                                                                         436
        <210> 354
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 atcagggacc accetttggg ttgatatttt gettaatetg catettttga gtaagateat
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 ctggcagtag aagctgttct ccaggtacat ttctctagct catgtacaaa aacatcctga
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caatatggaa ggctctaatt tgcccatatt tgaaataata attcagcttt ttgtaataca
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aaataacaaa ggattgagaa tcatggtgtc taatgtataa aagacccagg aaacataaat
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atatcaactg cataaatgta aaatgcatgt gacccaagaa ggccccaaag tggcagacaa
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cattgtaccc attttccctt ccaaaatgtg agcggcgggc ctgctgcttt caaggctgtc
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                                                                        60
atccacaagt catacctgga tgtcagcgaa gagggcacgg aggcagcagc agccactggg
                                                                       120
gacagcatcg ctgtaaaaag cctaccaatg agagctcagt tcaaggcgaa ccacccttc
                                                                       180
ctgttcttta taaggcacac tcataccaac acgatcctat tctgtggcaa gcttgcctct
                                                                       240
ccctaatcag atggggttga gtaaggctca gagttgcaga tgaggtgcag agacaatcct
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gtgactttcc cacggccaaa aagctgttca cacctcacgc acctctgtgc ctcagtttgc
                                                                       360
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                                                                      420
tttgttaatc atggaaaaag gtagacttat gcagaaagcc tttctggctt tcttatctgt
                                                                      480
ggtgtctcat ttgagtgctg tccagtgaca tgatcaagtc aatgagtaaa attttaaggg
                                                                      540
attagatttt cttgacttgt atgtatctgt gagatcttga ataagtgacc tgacatctct
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 gtctcttagg gaggcttaaa tctgtctcag gtgtgctaag agtgccagcc caaggkggtc
                                                                      240
 aaaagtccac aaaactgcag tctttgctgg gatagtaagc caagcagtgc ctggacagca
                                                                      300
 gagttetttt ettgggcaac agataaccag acaggaetet aategtgete ttattcaaca
                                                                      360
 ttcttctgtc tctgcctaga ctggaataaa aagccaatct ctctcgtggc acagggaagg
                                                                      420
 480
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aagccacaac caaracttga ttttatcaac aaaaacccct aaatataaac ggsaaaaaag
                                                                     180
atagatataa ttattccagt ttttttaaaa cttaaaaarat attccattgc cgaattaara
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gcataatctg tacaaaatta aactgtcctt tttggcattt taacaaattt gcaacgktct
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                                                                     300
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attaaagatg tgaagattaa gatcttggtg gcattcaggg attggcactt ctacaagaaa
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tcactgaagg gagtaatgtg acattacttt tcacttcagg atggccattc taactccagg
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gggtagactg gactaggtaa gactggaggc aggtagacct cttctaaggc ctgcgatagt
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gaaagacaaa aataagtggg gaaattcagg ggatagtgaa aatcagtagg acttaatgag
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  aggattaact gttttaggaa cagatataaa gcttcgccac ggaagagatg gacaaagcac
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 tgcaacatta tgcttcatga ataatatgta gaaagaaggt ctgatgaaaa tgacatcctt
                                                                         360
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                                                                         420
 aatgtcattg acttatcaaa tactatcttg gcatataacc tatgaaggca aaactaaaca
                                                                         480
 aacaaaaagc tcacaccaaa caaaaccatc aacttatttt gtattctata acatacgaga
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                                                                         600
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                                                                        300
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                                                                        420
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                                                                        431
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                                                                       180
caatcctgga ttcaatgtct gaaacctcgc tctctgcctg ctggacttct gaggccgtca
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agttccattt ctcactttgg ttgatctggg tgccttccat gtgctggctc tgggcatagc
cacacttgca cacattetee etgataagea egatggtgtg gacaggaagg aaggatttea
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aaaacaaggt ggatagatct agaattgtaa cattttaaga aaaccatagc atttgacaga
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catttcacac cetteatata aatteactat ettggettga ggeactecat aaaatgtate
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acgtgcatag taaatcttta tatttgctat ggcgttgcac tagaggactt ggactgcaac
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gactgtcacg atgtgtatag tacagtttga caagcctggg tccatacaga ccgctggaga
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  aagatacatc aacattttgc tcaagtagag ggctgactat acttgctgat ccacaacata
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  cagcaagtat gagagcagtt cttccatatc tatccagcgc atttaaattc gctttttct
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  tccatgccgg ctgcttcttc tgtgaagaag ccatttggtc tcaggagcaa gatgggcaag
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  tggtgctgcc gttgcttccc ctgctgcagg gagagcggca agagcaacgt gggcacttct
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  ggagaccacg acgactctgc tatgaagaca ctcaggagca agatgggcaa gtggtgccgc
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  cactgettee cetgetgeag ggggagtgge aagageaacg tgggegette tggagaceae
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  gacgaytctg ctatgaagac actcaggaac aagatgggca agtggtgctg ccactgcttc
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  ccctgctgca gggggagcrg caagagcaag gtgggcgctt ggggagacta cgatgacagt
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Ser Met Leu Phe Leu Val Ile Ile Met
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Gln Lys Arg Thr Ala Leu His Leu Ala Ser Ala Asn Gly Asn Ser Glu
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Val Val Lys Leu Xaa Leu Asp Arg Cys Gln Leu Asn Val Leu Asp
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Asn Lys Lys Arg Thr Ala Leu Xaa Lys Ala Val Gln Cys Gln Glu Asp
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                                   90
Glu Cys Ala Leu Met Leu Leu Glu His Gly Thr Asp Pro Asn Ile Pro
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Asp Glu Tyr Gly Asn Thr Thr Leu His Tyr Ala Xaa Tyr Asn Glu Asp
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Lys Leu Met Ala Lys Ala Leu Leu Leu Tyr Gly Ala Asp Ile Glu Ser
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                           40
His Asp Asp Ser Ala Met Lys Thr Leu Arg Ser Lys Met Gly Lys Trp
                       55
Cys Arg His Cys Phe Pro Cys Cys Arg Gly Ser Gly Lys Ser Asn Val
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Gly Ala Ser Gly Asp His Asp Asp Ser Ala Met Lys Thr Leu Arg Asn
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				85					90					٥٠	
Lys	s Me	t Gly	/ Ly		Cys	Cys	His	S Cvs			o Cv:	g ("v	e Ar	95 a Gl	y Ser
			10	Ü				109	5				11	^	
		111	,				120)				12	5		a Phe
Met	: Glu 130	ı Pro	Arg	Tyr	His	Val	Arg	g Gly	/ Gl	u Ası) Let	ı Ası	p Ly	s Le	u His
Arc 145	y Ala	a Ala	Tr	Trp	Gly 150	Lys	Va]	. Pro	Arg	g Lys 15	s Asp	Le	ı Ile	e Va	1 Met
Leu	Arç	Asp	Thi	Asp 165	Val	Asn	Lys	Lys	Asp 170	р Гуз	Glr	ı Lys	Arg		160 r Ala
			TRO)				185	Sei	Glu			197	`	ı Leu
		TAD					200	Val	Leu			205	Lys	Arg	g Thr
Ala	Leu 210	Ile	Lys	Ala	Val	Gln 215	Cys	Gln	Glu	a Asp	Glu 220	Cys	Ala	Leu	1 Met
225					230					235	Asp	Glu			Asn 240
				245					250)				255	Lys
			260					265					270	His	Gly
		2/5					280					285			·Val
	290				Lys	295					300				_
G1y 305	Arg	Thr	Ala	Leu	Ile	Leu	Ala	Val	Cys		${\tt Gl}_{f Y}$	Ser	Ala	Ser	Ile
	Ser	Len	Len	Len	310	Gla	N a m	T7.	'n	315	_	_			320
				325	Glu	GIII	ASII	116	330		ser	Ser	Gin	Asp 335	Leu
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		355			Ser		360					365	Leu		
	3/0				Asn	375					380				
305					Val 390					395					400
				405	Phe				410					415	
			420		Cys			425					430		
		435			Asp .		440					445			_
	450					455					460				
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	Leu	Arg	Asn		Met (Gly :	Lys	Trp	Cys	475 Cys	His	Cys			480 Cys
Cys	Arg	Gly	Ser 500		Lys :	Ser 1	Lys	Val 505	490 Gly	Ala	Trp	Gly	Asp	495 Tyr	Asp
Asp	Ser			Met	Glu 1	Pro i			His	Val		Gly 525	510 Glu	Asp	Leu

WO 00/04149 PCT/US99/15838

Asp	Lys 530	Leu	His	Arg	Ala	Ala 535	Trp	Trp	Gly	Lys	Val 540	Pro	Arg	Lys	Asp
Leu 545	Ile	Val	Met	Leu	Arg 550	Asp	Thr	Asp	Val	Asn 555	Lys	Lys	Asp	Lys	Gln 560
Lys	Arg	Thr	Ala	Leu 565	His	Leu	Ala	Ser	Ala 570	Asn	Gly	Asn	Ser	Glu 575	Val
Val	Lys	Leu	Leu 580	Leu	Asp	Arg	Arg	Cys 585	Gln	Leu	Asn	Val	Leu 590	Asp	Asn
Lys	Lys	Arg 595	Thr	Ala	Leu	Ile	Lys 600	Ala	Val	Gln	Суѕ	Gln 605	Glu	Asp	Glu
Cys	Ala 610	Leu	Met	Leu	Leu	Glu 615	His	GÌY	Thr	Asp	Pro 620	Asn	Ile	Pro	Asp
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785					Ser 790					795				_	800
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		835			Arg		840					845			
	850				Glu	855					860				
865	Tyr	Lys	Glu	Lys	Gln 870	Met	Pro	Lys	Tyr	Ser 875	Ser	Glu	Asn	Ser	As n 880
Pro	Glu	Gln	Asp	Leu 885	Lys	Leu	Thr	Ser	Glu 890	Glu	Glu	Ser	Gln	Arg 895	Leu
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		915			His		920					925			
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Pro 945	Arg	Lys	Ser	Arg	Thr 950	Pro	Glu	Ser	Gln	Gln 955	Phe	Pro	Asp	Thr	Glu 960
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Cys Glu Glu Gln Asn Thr Gly Ile Leu His Asp Glu 980 985 Glu Glu Lyg Glu Llo Glu Wel Wel Glu Glu Glu Lyg	975
Glu Clu Iva Clu Ila Clu Val Val Clu I	Ile Leu Ile His 990
Glu Glu Lys Gln Ile Glu Val Val Glu Lys Met Asn 995 1000	
Leu Ser Cys Lys Lys Glu Lys Asp Ile Leu His Glu 1010 1015 102	Asn Ser Thr Leu
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Gln Ser Gln Leu Pro Arg Thr His Met Val Val Glu 1045 1050	
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Leu Arg Ser Lys Met Gly Lys Trp Cys Arg His Cys 1105 1110 1115	
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Cys Phe Pro Cys Cys Arg Gly Ser Gly Lys Ser Lys . 1155 1160	Val Gly Ala Trp 1165
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Gly Glu Asp Leu Asp Lys Leu His Arg Ala Ala Trp 1185 1190 1195	120
Pro Arg Lys Asp Leu Ile Val Met Leu Arg Asp Thr 1205 1210	1215
Lys Asp Lys Gln Lys Arg Thr Ala Leu His Leu Ala 1220 1225	1230
Asn Ser Glu Val Val Lys Leu Leu Leu Asp Arg Arg 1235 1240	1245
Val Leu Asp Asn Lys Lys Arg Thr Ala Leu Ile Lys 1250 1255 1260	_
Gln Glu Asp Glu Cys Ala Leu Met Leu Leu Glu His 1265 1270 1275	128
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Asn Glu Asp Lys Leu Met Ala Lys Ala Leu Leu Leu 1300 1305	Tyr Gly Ala Asp 1310
The Glu Ser Lye Asp Lyg Mic Clar Lou When Done I am	1325
	Lys Lys Lys Ala
1315 1320 His Glu Gln Lys Gln Gln Val Val Lys Phe Leu Ile 1330 1335 1340	
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His Glu Gln Lys Gln Gln Val Val Lys Phe Leu Ile 1330 1335 1340 Asn Leu Asn Ala Leu Asp Arg Tyr Gly Arg Thr Ala 1345 1350 1355 Val Cys Cys Gly Ser Ala Ser Ile Val Ser Leu Leu	Leu Ile Leu Ala 136 Leu Glu Gln Asn 1375

Lys Glu Lys Gln Met Leu Lys Ile Ser Ser Glu Asn Ser Asn Pro Glu 1415 Gln Asp Leu Lys Leu Thr Ser Glu Glu Glu Ser Gln Arg Phe Lys Gly 1430 1435 Ser Glu Asn Ser Gln Pro Glu Lys Met Ser Gln Glu Pro Glu Ile Asn 1445 1450 Lys Asp Gly Asp Arg Glu Val Glu Glu Glu Met Lys Lys His Glu Ser 1460 1465 Asn Asn Val Gly Leu Leu Glu Asn Leu Thr Asn Gly Val Thr Ala Gly 1480 Asn Gly Asp Asn Gly Leu Ile Pro Gln Arg Lys Ser Arg Thr Pro Glu 1495 1500 Asn Gln Gln Phe Pro Asp Asn Glu Ser Glu Glu Tyr His Arg Ile Cys 1510 1515 Glu Leu Val Ser Asp Tyr Lys Glu Lys Gln Met Pro Lys Tyr Ser Ser 1525 1530 1535 Glu Asn Ser Asn Pro Glu Gln Asp Leu Lys Leu Thr Ser Glu Glu Glu 1540 1545 Ser Gln Arg Leu Glu Gly Ser Glu Asn Gly Gln Pro Glu Lys Arg Ser 1560 1555 1565 Gln Glu Pro Glu Ile Asn Lys Asp Gly Asp Arg Glu Leu Glu Asn Phe 1575 Met Ala Ile Glu Glu Met Lys Lys His Gly Ser Thr His Val Gly Phe 1590 1595 Pro Glu Asn Leu Thr Asn Gly Ala Thr Ala Gly Asn Gly Asp Asp Gly 1605 . 1610 Leu Ile Pro Pro Arg Lys Ser Arg Thr Pro Glu Ser Gln Gln Phe Pro 1620 1625 Asp Thr Glu Asn Glu Glu Tyr His Ser Asp Glu Gln Asn Asp Thr Gln 1640 1645 Lys Gln Phe Cys Glu Glu Gln Asn Thr Gly Ile Leu His Asp Glu Ile 1655 1660 Leu Ile His Glu Lys Gln Ile Glu Val Val Glu Lys Met Asn Ser 1670 1675 Glu Leu Ser Leu Ser Cys Lys Glu Lys Asp Ile Leu His Glu Asn 1685 1690 Ser Thr Leu Arg Glu Glu Ile Ala Met Leu Arg Leu Glu Leu Asp Thr 1700 1705 Met Lys His Gln Ser Gln Leu 1715 <210> 379 <211> 656 <212> PRT <213> Homo sapien

<400> 379

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 Glu
 Val
 Asp
 Ser
 Met
 Pro
 Ala
 Ala
 Ser
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 Val
 Lys
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 Ala
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 Ser
 Ser
 Val
 Lys
 Lys
 Lys
 Lys
 Trp
 Cys
 Cys
 Arg
 Cys
 Phe

 Pro
 Cys
 Cys
 Arg
 Glu
 Ser
 Gly
 Lys
 Ser
 Asn
 Val
 Gly
 Trp
 Cys
 Phe
 30
 Asp
 As

Cys 65	Arg	g His	s Cys	s Phe	Pro	Cys	Cys	arg	g Gl	y Sei 75	r Gly	y Ly:	s Se	r As:	n Val
Gly	Ala	a Ser	Gly	/ Asp 85) His	Asp	Asp	Ser	Ala 90	a Met	Lys	s Th	r Lei	ı Arg	g Asn
			100)				105	5				11/	g Gly	/ Ser
		113)				120)				125	Ser	: Ala	a Phe
	130	,				135					140	Asp	Lys		His
142					120					155	i				Met 160
				102					170)				175	Ala
			180					185					190		Leu
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	210				Val	215					220				
225					230					235					Asn 240
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	290				Lys	295					300				
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		355			Ser		360					365			
	3/0					375					380				
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				405	Glu				410					415	Glu
			420		His			425					Leu 430	Glu	
		435			Thr		440					Gly 445	Leu		
	450					455					460				
Ser 465	Glu	Glu	Tyr	His	Arg 470	Ile	Cys	Glu	Leu	Val 475	Ser	Asp	Tyr		
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Leu	Lys	Leu	Thr		Glu	Glu	Glu	Ser	Gln	Arg	Leu	Glu	Gly	495 Ser	Glu

500 505 Asn Gly Gln Pro Glu Leu Glu Asn Phe Met Ala Ile Glu Glu Met Lys 520 Lys His Gly Ser Thr His Val Gly Phe Pro Glu Asn Leu Thr Asn Gly 535 Ala Thr Ala Gly Asn Gly Asp Asp Gly Leu Ile Pro Pro Arg Lys Ser 550 555 Arg Thr Pro Glu Ser Gln Gln Phe Pro Asp Thr Glu Asn Glu Glu Tyr 565 570 His Ser Asp Glu Gln Asn Asp Thr Gln Lys Gln Phe Cys Glu Glu Gln 585 Asn Thr Gly Ile Leu His Asp Glu Ile Leu Ile His Glu Glu Lys Gln 600 Ile Glu Val Val Glu Lys Met Asn Ser Glu Leu Ser Leu Ser Cys Lys 615 Lys Glu Lys Asp Ile Leu His Glu Asn Ser Thr Leu Arg Glu Glu Ile 630 635 Ala Met Leu Arg Leu Glu Leu Asp Thr Met Lys His Gln Ser Gln Leu 650

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<211> 671

<212> PRT

<213> Homo sapien

<400> 380

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225	;				23(n					_				
		r Le	u Hi:	s Tv			⇒ ጥ ኒታ	r Ac	n (2)	23	5 5	~ 7 ~	1/		240 a Lys
				24!	5		J Iy.	L AS	11 G1 25	u AS	Б гА	з те	u Me		
Ala	Lei	ı Le	ı Leı			/ Ala	a Ası	o Il	e Gl	u Se	r Iw	= λ e	n I.u	25 114	s Gly
			260	,				26	5				27	Ω	
Leu	Thi	r Pro) Let	ı Let	ı Let	ı Gly	/ Val	l Hi	s Gl	u Gl:	n Lvs	s G1:	n Gl	n Va	l Val
		2/:)				280)				28	5		
Lys	Phe	e Lei	ı Ile	Lys	Lys	Lys	Ala	a Ası	n Lei	u Ası	n Ala	a Le	u As	p Ar	g Tyr
	290	,				295	5				300	1			
305	Arg	i uni	: Ala	a Leu	1 Ile	Leu	ı Ala	a Va:	l Cys	s Су:	s Gly	/ Se	r Al	a Se	r Ile
		T.01	1 T.A.	Lav	310					319	5				320
• • • •	501		, nec	325	i Giu	GII	ASI	1 TTE	e Asp	o Va.	L Ser	Se	r Gl :		p Leu
Ser	Gly	Glr	Thr			Glu	Tur	- בו	33(V=1	, ,				33!	5 S Val
	-		340)	5	-	7 -	345	. va.	. Sei	. ser	nı:	350		s Val
Ile	Cys	Glr	Leu	Leu	Ser	Asp	Tyr			ı Lvs	: Gln	Met	. T.D	J 1 Tare	3 Ile
		355)				360)				365	:		
Ser	Ser	Glu	Asn	Ser	Asn	Pro	Glu	Glr	ı Asp	Leu	Lys	Leu	Thi	: Sei	Glu
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Glu	Glu	Ser	Gln	Arg	Phe	Lys	Gly	Ser	Glu	Asn	Ser	Glr	Pro	Gli	Lys
303					390					395					400
ricc	SCI	3111	Giu	405	GIU	тте	Asn	Lys	Asp	Gly	Asp	Arg	Glı		Glu
Glu	Glu	Met	Lvs			Glu	Ser	λen	410	1757	~ 1	•	-	415	Asn
			420					425					420		
Leu	Thr	Asn	Gly	Val	Thr	Ala	Gly	Asn	Glv	Asp	Asn	Glv	T.e.11	Tle	Pro
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Gln	Arg	Lys	Ser	Arg	Thr	Pro	Glu	Asn	Gln	Gln	Phe	Pro	Asp	Asn	Glu
	450					455					460				
465	GIU	GIU	ıyr	HIS	Arg 470	lle	Cys	Glu	Leu		Ser	Asp	Tyr	Lys	Glu
	Gln	Met	Pro	Lvs		Sar	So~	<i>G</i> 3	3	475	•	_			480 Asp
-				485	- 7 -	DCI	361	GIU	490	ser	Asn	Pro	Glu		Asp
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His		Ser	Thr	ui c	W- 1	535	Db -	5		_	540				
545	- 1	DC1		1115	550	GIY	Pne	Pro	GIU	Asn	Leu	Thr	Asn	Gly	
Thr	Ala	Gly	Asn	Glv		Asp	Glv	Leu	Tle	555 Pro	Pro	X == ~	T	0	560
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Ser	Asp	Glu	Gln	Asn	Asp	Thr	Gln	Lys	Gln	Phe	Cys	Glu	Glu	Gln	Asn
		333					600					605			
Thr	619 610	тте	Leu	His	Asp	Glu	Ile	Leu	Ile	His	Glu	Glu	Lys	Gln	Ile
		Val	Glu	Luc	Mo+	615	C	~ 1		_	620				
Glu 625		- 41	-14	ay 5	630	M211	3er	GIU	ьeп	Ser	Leu	Ser	Cys	Lys	
Glu	Lys	Asp	Ile	Leu		Glu	Asn	Ser	Thr	635	λ~~	C1	C1	T 1 -	640
				645					650					655	AIG
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<213> Homo sapiens
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Lys Lys Asp Arg Ala Trp Leu Arg Cys Pro Glu Ala Val Ala Gly Phe
                         55
Pro Leu Gly Ser Asp Cys Arg Glu Gly Gly Arg Gln Gly Cys Gly Gly
 65
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Ser Asp Asp Glu Asp Asp Leu Gly Val Ala Pro Gly Leu Ala Pro Ala
                                     90
Trp Ala Leu Thr Gln Pro Pro Ser Gln Ser Pro Gly Pro Gln Ser Leu
            100
                                105
                                                    110
Pro Ser Thr Pro Ser Ser Ile Trp Pro Gln Trp Val Ile Leu Ile Thr
        115
                            120
Glu Leu Thr Ile Pro Ser Pro Ala His Gly Pro Pro Trp Leu Pro Asn
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145
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tagccagggc actgctgcca acagccagtc cnnataccat catgtnaccc ggtgngctct 180
naantingat niccanagee clacecaten tagticiget cleecacegg niaccagee 240
cactgcccag gaatcctaca gccagtaccc tgtcccgacg tctctaccta ccagtacgat 300
gagaceteeg getactaeta tgace
<210> 392
<211> 277
<212> DNA
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1)...(277)
<223> n = A,T,C or G
<400> 392
atattgttta acteetteet ttatatettt taacatttte atggngaaag gtteacatet 60
agtctcactt nggcnagngn ctcctacttg agtctcttcc ccggcctgnn ccagtngnaa 120
antaccanga accgncatgn cttaanaacn ncctggtttn tgggttnntc aatgactqca 180
tgcagtgcac caccetgtcc actacgtgat gctgtaggat taaagtetca cagtgggegg 240
ctgaggatac agcgccgcgt cctgtgttgc tggggaa
<210> 393
<211> 566
<212> DNA
<213> Homo sapiens
<400> 393
actagtccag tgtggtggaa ttcgcggccg cgtcgacgga caggtcagct gtctggctca 60
gtgatctaca ttctgaagtt gtctgaaaat gtcttcatga ttaaattcag cctaaacgtt 120
ttgccgggaa cactgcagag acaatgctgt gagtttccaa ccttagccca tctgcgggca 180
gagaaggtct agtttgtcca tcagcattat catgatatca ggactggtta cttggttaag 240
gaggggtcta ggagatctgt cccttttaga gacaccttac ttataatgaa gtatttggga 300
gggtggtttt caaaagtaga aatgtcctgt attccgatga tcatcctgta aacattttat 360
catttattaa tcatccctgc ctgtgtctat tattatattc atatctctac gctggaaact 420
cattetetge etgagtttta atttttgtee aaagttattt taatetatae aattaaaage 540
ttttgcctat caaaaaaaa aaaaaa
<210> 394
<211> 384
<212> DNA
<213> Homo sapiens
<220>
<221> misc feature
```

```
<222> (1)...(384)
<223> n = A,T,C or G
<400> 394
gaacatacat gtcccggcac ctgagctgca gtctgacatc atcgccatca cgggcctcgc 60
tgcaaattng gaccgggcca aggctggact gctggagcgt gtgaaggagc tacaggccna 120
gcaggaggac cgggctttaa ggagttttaa gctgagtgtc actgtagacc ccaaatacca 180
tcccaagatt atcgggagaa agggggcagt aattacccaa atccggttgg agcatgacgt 240
gaacatccag tttcctgata aggacgatgg gaaccagccc caggaccaaa ttaccatcac 300
agggtacgaa aagaacacag aagctgccag ggatgctata ctgagaattg tgggtgaact 360
tgagcagatg gtttctqaqq acqt
<210> 395
<211> 399
<212> DNA
<213> Homo sapiens
<400> 395
ggcaaaactg tgtgacctca ataagacctc gcagatccaa ggtcaagtat cagaagtgac 60
tetgacettg gaetecaaga eetacateaa cageetgget atattagatg atgageeagt 120
tatcagaggt ttcatcattg cggaaattgt ggagtctaag gaaatcatgg cctctgaagt 180
atteacgtet ttecagtace etgagttete tatagagttg cetaacacag geagaattgg 240
ccagctactt gtctgcaatt gtatcttcaa gaataccctg gccatccctt tgactgacgt 300
caagttetet ttggaaagee tgggeatete eteactacag acetetgace atgggaeggt 360
gcagcctggt gagaccatcc aatcccaaat aaaatgcac
<210> 396
<211> 403
<212> DNA
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1)...(403)
\langle 223 \rangle n = A,T,C or G
<400> 396
tggagttntc agtgcaaaca agccataaag cttcagtagc aaattactgt ctcacagaaa 60
gacattttca acttctgctc cagctgctga taaaacaaat catgtgttta gcttgactcc 120
agacaaggac aacctgttcc ttcataactc tctagagaaa aaaaggagtt gttagtagat 180
actaaaaaaa gtggatgaat aatctggata tttttcctaa aaagattcct tgaaacacat 240
taggaaaatg gagggcctta tgatcagaat gctagaatta gtccattgtg ctgaagcagg 300
gtttagggga gggagtgagg gataaaagaa ggaaaaaaag aagagtgaga aaacctattt 360
atcaaagcag gtgctatcac tcaatgttag gccctgctct ttt
                                                                   403
<210> 397
<211> 100
<212> DNA
<213> Homo sapiens
<220>
<221> misc feature
<222> (1)...(100)
<223> n = A,T,C \text{ or } G
```

```
<400> 397
actagincag igiggiggaa ticgcggccg cgicgaccta naanccatci ciatagcaaa 60
tccatccccg ctcctggttg gtnacagaat gactgacaaa
<210> 398
<211> 278
<212> DNA
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1)...(278)
<223> n = A,T,C or G
<400> 398
gcggccgcgt cgacagcagt tccgccagcg ctcgcccctg ggtggggatg tgctgcacgc 60
ccacctggac atctggaagt cagcggcctg gatgaaagag cggacttcac ctggggcgat 120
tcactactgt gcctcgacca gtgaggagag ctggaccgac agcgaggtgg actcatcatg 180
ctccgggcag cccatccacc tgtggcagtt cctcaaggag ttgctactca agccccacaq 240
ctatggccgc ttcattangt ggctcaacaa ggagaagg
<210> 399
<211> 298
<212> DNA
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1)...(298)
<223> n = A,T,C or G
<400> 399
acggaggtgg aggaagcgnc cctgggatcg anaggatggg tcctgncatt gaccncctcn 60
ggggtgccng catggagcgc atgggcgcgg gcctgggcca cggcatggat cgcgtgggct 120
ccgagatcga gcgcatgggc ctggtcatgg accgcatggg ctccgtggag cgcatgggct 180
ccggcattga gcgcatgggc ccgctgggcc tcgaccacat ggcctccanc attgancgca 240
tgggccagac catggagcgc attggctctg gcgtggagcn catgggtgcc ggcatggg
<210> 400
<211> 548
<212> DNA
<213> Homo sapiens
<400> 400
acatcaacta cttcctcatt ttaaggtatg gcagttccct tcatcccctt ttcctgcctt 60
gtacatgtac atgtatgaaa tttccttctc ttaccgaact ctctccacac atcacaaggt 120
tgagtctctt ttttccacgt ttaaggggcc atggcaggac ttagagttgc gagttaagac 240
tgcagagggc tagagaatta tttcatacag gctttgaggc cacccatgtc acttatcccg 300
tataccetet caccatecce ttgtctacte tgatgecece aagatgeaac tgggcageta 360
gttggcccca taattctggg cctttgttgt ttgttttaat tacttgggca tcccaggaag 420
ctttccagtg atctcctacc atgggccccc ctcctgggat caagcccctc ccaggccctg 480
tecceageee etectgeece ageceaeeeg ettgeettgg tgeteageee teccattggg 540
agcaggtt
                                                                548
```

```
<210> 401
 <211> 355
 <212> DNA
 <213> Homo sapiens
 <220>
<221> misc_feature
 <222> (1)...(355)
<223> n = A, T, C or G
<400> 401
actgtttcca tgttatgttt ctacacattg ctacctcagt gctcctggaa acttagcttt 60
tgatgtctcc aagtagtcca ccttcattta actctttgaa actgtatcat ctttgccaag 120
taagagtggt ggcctatttc agctgctttg acaaaatgac tggctcctga cttaacgttc 180
tataaatgaa tgtgctgaag caaagtgccc atggtggcgg cgaagaagan aaagatgtgt 240
tttgttttgg actctctgtg gtcccttcca atgctgnggg tttccaacca ggggaagggt 300
cccttttgca ttgccaagtg ccataaccat gagcactact ctaccatggn tctgc
<210> 402
<211> 407
<212> DNA
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1)...(407)
<223> n = A,T,C or G
<400> 402
atggggcaag ctggataaag aaccaagacc cactggagta tgctgtcttc aagaaaccca 60
tctcacatgc ggtggcatac ataggctcaa aataaaggaa tggagaaaaa tatttcaagc 120
aaatggaaaa cagaaaaaag caggtgttgc actcctactt tctgacaaaa cagactatgc 180
gaataaagat aaaaaagaga aggacattac aaaggtggtc ctgacctttg ataaatctca 240
ttgcttgata ccaacctggg ctgttttaat tgcccaaacc aaaaggataa tttgctgagg 300
ttgtggagct tctcccctgc agagagtccc tgatctccca aaatttggtt gagatgtaag 360
gntgattttg ctgacaactc cttttctgaa gttttactca tttccaa
<210> 403
<211> 303
<212> DNA
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1)...(303)
<223> n = A,T,C or G
<400> 403
cagtatttat agccnaactg aaaagctagt agcaggcaag tctcaaatcc aggcaccaaa 60
tcctaagcaa gagccatggc atggtgaaaa tgcaaaagga gagtctggcc aatctacaaa 120
tagagaacaa gacctactca gtcatgaaca aaaaggcaga caccaacatg gatctcatgg 180
gggattggat attgtaatta tagagcagga agatgacagt gatcgtcatt tggcacaaca 240
tettaacaae gacegaaace cattatttae ataaacetee atteggtaae catgttgaaa 300
gga
```

```
<210> 404
<211> 225
<212> DNA
<213> Homo sapiens
<400> 404
aagtgtaact tttaaaaaatt tagtggattt tgaaaaattct tagaggaaag taaaggaaaa 60
attgttaatg cactcattta cetttacatg gtgaaagtte tetettgate etacaaacag 120
acattttcca ctcgtgtttc catagttgtt aagtgtatca gatgtgttgg gcatgtgaat 180
ctccaagtgc ctgtgtaata aataaagtat ctttatttca ttcat
<210> 405
<211> 334
<212> DNA
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1) ... (334)
<223> n = A, T, C or G
<400> 405
gagctgttat actgtgagtt ctactaggaa atcatcaaat ctgagggttg tctggaggac 60
ttcaatacac ctcccccat agtgaatcag cttccagggg gtccagtccc tctccttact 120
teatececat eccatgeeaa aggaagaeee teeeteettg geteacagee ttetetagge 180-
ttcccagtgc ctccaggaca gagtgggtta tgttttcagc tccatccttg ctgtgagtgt 240
ctggtgeggt tgtgcctcca gcttctgctc agtgcttcat ggacagtgtc cagcccatgt 300
cactetecae teteteanng tggateceae eeet
                                                                   334
<210> 406
<211> 216
<212> DNA
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1)...(216)
<223> n = A,T,C or G
<400> 406
tttcatacct aatgagggag ttganatnac atnnaaccag gaaatgcatg gatctcaang 60
gaaacaaaca cccaataaac tcggagtggc agactgacaa ctgtgagaca tqcacttqct 120
acnaaacaca aatttnatgt tgcaccettg tttctacace tgtgggttat gacaaagaca 180
actgccaaag aatnttcaag aaggaggact gccant
                                                                   216
<210> 407
<211> 413
<212> DNA
<213> Homo sapiens
<400> 407
gctgacttgc tagtatcatc tgcattcatt gaagcacaag aacttcatgc cttgactcat 60
gtaaatgcaa taggattaaa aaataaattt gatatcacat ggaaacagac aaaaaatatt 120
gtacaacatt gcacccagtg tcagattcta cacctggcca ctcaggaagc aagagttaat 180
cccagaggtc tatgtcctaa tgtgttatgg caaatggatg tcatgcacgt accttcattt 240
```

```
ggaaaattgt catttgtcca tgtgacagtt gatacttatt cacatttcat atgggcaacc 300
tgccagacag gagaaagtct tcccatgtta aaagacattt attatcttgt tttcctgtca 360
tgggagttcc agaaaaagtt aaaacagaca atgggccagg ttctgtagta aag
                                                                    413
<210> 408
<211> 183
<212> DNA
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1)...(183)
<223> n = A, T, C or G
<400> 408
ggagctngcc ctcaattcct ccatntctat gttancatat ttaatgtctt ttgnnattaa 60
tncttaacta gttaatcctt aaagggctan ntaatcctta actagtccct ccattgtgag 120
cattatectt ccagtatten cettetnttt tatttactee tteetggeta cccatgtact 180
ntt
<210> 409
<211> 250
<212> DNA
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1)...(250)
<223> n = A,T,C or G
<400> 409
cccacgcatg ataagctctt tatttctgta agtcctgcta ggaaatcatc aaatctgacg 60
gtggtttggg ggacctgaac aaacctcctg taattaatca gctttcagtt tctcccccta 120
gtccctcctt caacaacata ggaggatcct ccccttcttt ctgctcacgg ccttatctag 180
gcttcccagt gcccccagga cagcgtgggc tatgtttaca gcgcntcctt gctgggggg 240
ggccntatgc
                                                                   250
<210> 410
<211> 306
<212> DNA
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1)...(306)
<223> n = A,T,C or G
<400> 410
ggctggtttg caagaatgaa atgaatgatt ctacagctag gacttaacct tgaaatggaa 60
agtettgeaa teccatttge aggateegte tgtgeacatg cetetgtaga gageageatt 120
cccagggacc ttggaaacag ttggcactgt aaggtgcttg ctccccaaga cacatcctaa 180
aaggtgttgt aatggtgaaa accgcttcct tctttattgc cccttcttat ttatgtgaac 240
nactggttgg ctttttttgn atctttttta aactggaaag ttcaattgng aaaatgaata 300
tcntgc
                                                                  306
```

```
<210> 411
<211> 261
<212> DNA
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1)...(261)
<223> n = A,T,C or G
<400> 411
agagatattn cttaggtnaa agttcataga gttcccatga actatatgac tggccacaca 60
ggatcttttg tatttaagga ttctgagatt ttgcttgagc aggattagat aaggctgttc 120
tttaaatgtc tgaaatggaa cagatttcaa aaaaaaaccc cacaatctag ggtgggaaca 180
aggaaggaaa gatgtgaata ggctgatggg caaaaaacca atttacccat cagttccagc 240
cttctctcaa ggngaggcaa a
<210> 412
<211> 241
<212> DNA
<213> Homo sapiens
<220>
<221> misc feature
<222> (1)...(241)
<223> n = A,T,C or G
<400> 412
gttcaatgtt acctgacatt tctacaacac cccactcacc gatgtattcg ttgcccagtg 60
ggaacatacc agcctgaatt tggaaaaaat aattgtgttt cttgcccagg aaatactacg 120
actgactttg atggctccac aaacataacc cagtgtaaaa acagaagatg tggagggag 180
ctgggagatt tcactgggta cattgaattc ccaaactacc cangcaatta cccagccaac 240
                                                                   241
<210> 413
<211> 231
<212> DNA
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1)...(231)
<223> n = A, T, C or G
<400> 413
aactettaca atecaagtga eteatetgtg tgettgaate etttecaetg teteatetee 60
ctcatccaag tttctagtac cttctctttg ttgtgaagga taatcaaact gaacaacaaa 120
aagtttactc teeteatttg gaacetaaaa actetettet teetgggtet gagggeteea 180
agaatccttg aatcanttct cagatcattg gggacaccan atcaggaacc t
<210> 414
<211> 234
<212> DNA
<213> Homo sapiens
```

```
<400> 414
actgtccatg aagcactgag cagaagctgg aggcacaacg caccagacac tcacagcaag 60
gatggagetg aaaacataac ceactetgte etggaggeac tgggaageet agagaagget 120
gtgagccaag gagggagggt cttcctttgg catgggatgg ggatgaagta aggagaggga 180
ctggaccccc tggaagctga ttcactatgg ggggaggtgt attgaagtcc tcca
<210> 415
<211> 217
<212> DNA
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1)...(217)
<223> n = A,T,C or G
<400> 415
gcataggatt aagactgagt atcttttcta cattcttta actttctaag gggcacttct 60
caaaacacag accaggtage aaatetecae tgetetaagg nteteaceae caetttetea 120
cacctagcaa tagtagaatt cagtcctact tctgaggcca gaagaatggt tcagaaaaat 180
antggattat aaaaaataac aattaagaaa aataatc
<210> 416
<211> 213
<212> DNA
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1)...(213)
<223> n = A,T,C or G
<400> 416
atgcatatnt aaagganact gcctcgcttt tagaagacat ctggnctgct ctctgcatga 60
ggcacagcag taaagctctt tgattcccag aatcaagaac tctccccttc agactattac 120
cgaatgcaag gtggttaatt gaaggccact aattgatgct caaatagaag gatattgact 180
atattggaac agatggagtc tctactacaa aag
                                                                   213
<210> 417
<211> 303
<212> DNA
<213> Homo sapiens
<220>
<221> misc feature
<222> (1)...(303)
<223> n = A,T,C or G
<400> 417
nagtetteag geceateagg gaagtteaca etggagagaa gteatacata tgtaetgtat 60
gtgggaaagg ctttactctg agttcaaatc ttcaagccca tcagagagtc cacactggag 120
agaagccata caaatgcaat gagtgtggga agagcttcag gagggattcc cattatcaag 180
ttcatctagt ggtccacaca ggagagaaac cctataaatg tgagatatgt gggaagggct 240
tcantcaaag ttcgtatctt caaatccatc ngaaggncca cagtatanan aaacctttta 300
agt
                                                                  303
```

```
<210> 418
<211> 328
<212> DNA
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1)...(328)
<223> n = A,T,C or G
<400> 418
tttttggcgg tggtggggca gggacgggac angagtetca etetgttgce caggetggag 60
tgcacaggca tgatctcggc tcactacaac ccctgcctcc catgtccaag cgattcttgt 120
gcctcagcct tccctgtagc tagaattaca ggcacatgcc accacaccca gctagttttt 180
gtatttttag tagagacagg gtttcaccat gttggccagg ctggtctcaa actcctnacc 240
tcagnggtca ggctggtctc aaactcctga cctcaagtga tctgcccacc tcagcctccc 300
aaagtgctan gattacaggc cgtgagcc
                                                                   328
<210> 419
<211> 389
<212> DNA
<213> Homo sapiens
<220>
<221> misc feature
<222> (1)...(389)
<223> n = A, T, C or G
<400> 419
cctcctcaag acggcctgtg gtccgcctcc cggcaaccaa gaagcctgca gtgccatatg 60
acccctgage catggactgg agectgaaag geagegtaca ecetgeteet gatettgetg 120
cttgtttcct ctctgtggct ccattcatag cacagttgtt gcactgaggc ttgtgcaggc 180
cgagcaaggc caagctggct caaagagcaa ccagtcaact ctgccacggt gtgccaqqca 240
coggttetec agecaceae eteacteget ecogeaaatg geacateagt tettetacee 300
taaaggtagg accaaagggc atctgctttt ctgaagtcct ctgctctatc agccatcacg 360
tggcagccac tcnggctgtg tcgacgcgg
                                                                   389
<210> 420
<211> 408
<212> DNA
<213> Homo sapiens
<400> 420
gttcctccta actcctgcca gaaacagctc tcctcaacat gagagctgca cccctcctcc 60
tggccagggc agcaagcctt agccttggct tcttgtttct gcttttttc tggctagacc 120
gaagtgtact agccaaggag ttgaagtttg tgactttggt gtttcggcat ggagaccgaa 180
gtcccattga cacctttccc actgacccca taaaggaatc ctcatggcca caaggatttg 240
qccaactcac ccagctgggc atggagcagc attatgaact tggagagtat ataaqaaaqa 300
gatatagaaa attcttgaat gagtcctata aacatgaaca ggtttatatt cgaagcacag 360
acgttgaccg gactttgatg aagtgctatg acaaacctgg caagcccg
<210> 421
<211> 352
<212> DNA
```

```
<213> Homo sapiens
 <220>
<221> misc feature
<222> (1)...(352)
<223> n = A,T,C or G
<400> 421
gctcaaaaat ctttttactg atnggcatgg ctacacaatc attgactatt acggaggcca 60
gaggagaatg aggcctggcc tgggagccct gtgcctacta naagcacatt agattatcca 120
ttcactgaca gaacaggtet tttttgggte ettettetee accaenatat aettgeagte 180
ctccttcttg aagattcttt ggcagttgtc tttgtcataa cccacaggtg tagaaacaag 240
ggtgcaacat gaaatttctg tttcgtagca agtgcatgtc tcacaagttg gcangtctgc 300
cacteegagt ttattgggtg tttgttteet ttgagateea tgeattteet gg
<210> 422
<211> 337
<212> DNA
<213> Homo sapiens
<400> 422
atgccaccat gctggcaatg cagcgggcgg tcgaaggcct gcatatccag cccaagctgg 60
cgatgatcga cggcaaccgt tgcccgaagt tgccgatgcc agccgaagcg gtggtcaagg 120
gcgatagcaa ggtgccggcg atcgcggcgg cgtcaatcct ggccaaggtc agccgtgatc 180
gtgaaatggc agctgtcgaa ttgatctacc cgggttatgg catcggcggg cataagggct 240
atccgacacc ggtgcacctg gaagccttgc agcggctggg gccgacgccg attcaccgac 300
gcttcttccg ccggtacggc tggcctatga aaattat
<210> 423
<211> 310
<212> DNA
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1)...(310)
\langle 223 \rangle n = A,T,C or G
<400> 423
gctcaaaaat ctttttactg atatggcatg gctacacaat cattgactat tagaggccag 60
aggagaatga ggcctggcct gggagccctg tgcctactan aagcncatta gattatccat 120
tcactgacag aacaggtett ttttgggtee ttetteteea ceacgatata ettgeagtee 180
tccttcttga agattctttg gcagttgtct ttgtcataac ccacaggtgt anaaacaagg 240
gtgcaacatg aaatttctgt ttcgtagcaa gtgcatgtct cacagttgtc aagtctgccc 300
tccgagttta
                                                                   310
<210> 424
<211> 370
<212> DNA
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1)...(370)
<223> n = A,T,C or G
```

```
<400> 424
gctcaaaaat ctttttactg ataggcatgg ctacacaatc attgactatt agaggccaga 60
ggagaatgag gcctggcctg ggagccctgt gcctactaga agcacattag attatccatt 120
cactgacaga acaggtettt tttgggteet tetteteeac cacgatatac ttgcagteet 180
ccttcttgaa gattctttgg cagttgtctt tgtcataacc cacaggtgta gaaacatcct 240
ggttgaatct cctggaactc cctcattagg tatgaaatag catgatgcat tgcataaagt 300
cacgaaggtg gcaaagatca caacgctgcc cagganaaca ttcattgtga taagcaggac 360
tccgtcgacg
<210> 425
<211> 216
<212> DNA
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1)...(216)
<223> n = A, T, C \text{ or } G
<400> 425
aattgctatn ntttattttg ccactcaaaa taattaccaa aaaaaaaaa tnttaaatga 60
taacaacnca acatcaaggn aaananaaca ggaatggntg actntgcata aatnggccga 120
anattatcca ttatnttaag ggttgacttc aggntacagc acacagacaa acatgcccag 180
gaggninica ggaccgcicg atginiting aggagg
<210> 426
<211> 596
<212> DNA
<213> Homo sapiens
<400> 426
cttccagtga ggataaccct gttgccccgg gccgaggttc tccattaggc tctgattgat 60
tggcagtcag tgatggaagg gtgttctgat cattccgact gccccaaggg tcgctggcca 120
gctctctgtt ttgctgagtt ggcagtagga cctaatttgt taattaagag tagatggtga 180
gctgtccttg tattttgatt aacctaatgg ccttcccagc acgactcgga ttcagctgga 240
gacatcacgg caacttttaa tgaaatgatt tgaagggcca ttaagaggca cttcccgtta 300
ttaggcagtt catctgcact gataacttct tggcagctga gctggtcgga gctgtggccc 360
aaacgcacac ttggcttttg gttttgagat acaactctta atcttttagt catgcttgag 420
ggtggatggc cttttcagct ttaacccaat ttgcactgcc ttggaagtgt agccaggaga 480
atacactcat atactcgtgg gcttagaggc cacagcagat gtcattggtc tactgcctga 540
gtcccgctgg tcccatccca ggaccttcca tcggcgagta cctgggagcc cqtqct
<210> 427
<211> 107
<212> DNA
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1)...(107)
<223> n = A,T,C or G
<400> 427
gaagaattca agttaggttt attcaaaggg cttacngaga atcctanacc caggncccag 60
```

```
cccgggagca gccttanaga gctcctgttt gactgcccgg ctcagng
                                                                    107
 <210> 428
 <211> 38
 <212> DNA
 <213> Homo sapiens
 <220>
 <221> misc_feature
 <222> (1)...(38)
 <223> n = A,T,C or G
<400> 428
gaacttccna anaangactt tattcactat tttacatt
                                                                    38
<210> 429
<211> 544
<212> DNA
<213> Homo sapiens
<400> 429
ctttgctgga cggaataaaa gtggacgcaa gcatgacctc ctgatgaggg cgctgcattt 60
attgaagagc ggctgcagcc ctgcggttca gattaaaatc cgagaattgt atagacgccg 120
atatccacga actcttgaag gactttctga tttatccaca atcaaatcat cggttttcag 180
tttggatggt ggctcatcac ctgtagaacc tgacttggcc gtggctggaa tccactcgtt 240
gccttccact tcagttacac ctcactcacc atcctctcct gttggttctg tgctgcttca 300
agatactaag cccacatttg agatgcagca gccatctccc ccaattcctc ctgtccatcc 360
tgatgtgcag ttaaaaaatc tgccctttta tgatgtcctt gatgttctca tcaagcccac 420
gagtttagtt caaagcagta ttcagcgatt tcaagagaag ttttttattt ttgctttgac 480
acctcaacaa gttagagaga tatgcatatc cagggatttt ttgccaggtg gtaggagaga 540
ttat
<210> 430
<211> 507
<212> DNA
<213> Homo sapiens
<220>
<221> misc feature
<222> (1)...(507)
<223> n = A,T,C or G
<400> 430
cttatcncaa tggggctccc aaacttggct gtgcagtgga aactccgggg gaattttgaa 60
gaacactgac acccatcttc caccccgaca ctctgattta attgggctgc agtgagaaca 120
gagcatcaat ttaaaaagct gcccagaatg ttntcctggg cagcgttgtg atctttgccn 180
ccttcgtgac tttatgcaat gcatcatgct atttcatacc taatgaggga gttccaggag 240
attcaaccag gatgtttcta cncctgtggg ttatgacaaa gacaactgcc aaagaatntt 300
caagaaggag gactgcaagt atatcgtggt ggagaagaag gacccaaaaa agacctgttc 360
tgtcagtgaa tggataatct aatgtgcttc tagtaggcac agggctccca ggccaggcct 420
catteteete tggeetetaa tagteaatga ttgtgtagee atgeetatea gtaaaaagat 480
ttttgagcaa aaaaaaaaa aaaaaaa
<210> 431
<211> 392
```

```
<212> DNA
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1) . . . (392)
<223> n = A,T,C or G
<400> 431
gaaaattcag aatggataaa aacaaatgaa gtacaaaata tttcagattt acatagcgat 60
aaacaagaaa gcacttatca ggaggactta caaatggaag tacactctan aaccatcatc 120
tatcatggct aaatgtgaga ttagcacagc tgtattattt gtacattgca aacacctaga 180
aagagatggg aaacaaaatc ccaggagttt tgtgtgtgga gtcctgggtt ttccaacaga 240
catcattcca gcattctgag attagggnga ttggggatca ttctggagtt ggaatgttca 300
acaaaagtga tgttgttagg taaaatgtac aacttctgga tctatgcaga cattgaaggt 360
gcaatgagtc tggcttttac tctgctgttt ct
<210> 432
<211> 387
<212> DNA
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1)...(387)
\langle 223 \rangle n = A,T,C or G
<400> 432
ggtatccnta cataatcaaa tatagctgta gtacatgttt tcattggngt agattaccac 60
aaatgcaagg caacatgtgt agatetettg tettattett ttgtetataa tactgtattg 120
ngtagtccaa gctctcggna gtccagccac tgngaaacat gctcccttta gattaacctc 180
gtggacnetn ttgttgnatt gtetgaactg tagngeeetg tattttgett etgtetgnga 240
attetgttge ttetggggea ttteettgng atgeagagga ceaceaeaa gatgaeagea 300
atctqaattg ntccaatcac agctgcgatt aagacatact gaaatcgtac aggaccqqqa 360
acaacgtata gaacactgga gtccttt
                                                                    387
<210> 433
<211> 281
<212> DNA
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1)...(281)
\langle 223 \rangle n = A,T,C or G
<400> 433
ttcaactagc anagaanact gcttcagggn gtgtaaaatg aaaggcttcc acgcagttat 60
ctgattaaag aacactaaga gagggacaag gctagaagcc gcaggatgtc tacactatag 120
caggenetat ttgggttgge tggaggaget gtggaaaaca tggagagatt ggegetggag 180
ategeogtgg ctattecten ttgntattac accagngagg ntetetgtnt geccaetggt 240
tnnaaaaccg ntatacaata atgatagaat aggacacaca t
                                                                    281
<210> 434
<211> 484
```

```
<212> DNA
<213> Homo sapiens
<400> 434
ttttaaaata agcatttagt gctcagtccc tactgagtac tctttctctc ccctcctctg 60
aatttaattc tttcaacttg caatttgcaa ggattacaca tttcactgtg atgtatattg 120
tgttgcaaaa aaaaaaagt gtctttgttt aaaattactt ggtttgtgaa tccatcttgc 180
tttttcccca ttggaactag tcattaaccc atctctgaac tggtagaaaa acatctgaag 240
agctagtcta tcagcatctg acaggtgaat tggatggttc tcagaaccat ttcacccaga 300
cagcctgttt ctatcctgtt taataaatta gtttgggttc tctacatgca taacaaaccc 360
tgctccaatc tgtcacataa aagtctgtga cttgaagttt agtcagcacc cccaccaaac 420
tttatttttc tatgtgtttt ttgcaacata tgagtgtttt gaaaataaag tacccatgtc 480
ttta
<210> 435
<211> 424
<212> DNA
<213> Homo sapiens
<400> 435
gcgccgctca gagcaggtca ctttctgcct tccacgtcct ccttcaagga agccccatgt 60
gggtagcttt caatatcgca ggttcttact cctctgcctc tataagctca aacccaccaa 120
cgatcgggca agtaaacccc ctccctcgcc gacttcggaa ctggcgagag ttcagcgcag 180
atgggcctgt ggggaggggg caagatagat gagggggagc ggcatggtgc ggggtgaccc 240
cttggagaga ggaaaaaggc cacaagaggg gctgccaccg ccactaacgg agatggcct 300
ggtagagacc tttgggggtc tggaacctct ggactcccca tgctctaact cccacactct 360
gctatcagaa acttaaactt gaggattttc tctgtttttc actcgcaata aattcagagc 420
aaac
<210> 436
<211> 667
<212> DNA
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1)...(667)
<223> n = A,T,C or G
<400> 436
accttgggaa nactctcaca atataaaggg tcgtagactt tactccaaat tccaaaaagg 60
tcctggccat gtaatcctga aagttttccc aaggtagcta taaaatcctt ataagggtgc 120
agcctcttct ggaattcctc tgatttcaaa gtctcactct caagttcttg aaaacgaggg 180
cagtteetga aaggeaggta tageaactga tetteagaaa gaggaactgt gtgeaceggg 240
atgggctgcc agagtaggat aggattccag atgctgacac cttctggggg aaacagggct 300
gccaggtttg tcatagcact catcaaagtc cggtcaacgt ctgtgcttcg aatataaacc 360
tgttcatgtt tataggactc attcaagaat tttctatatc tctttcttat atactctcca 420
agttcataat gctgctccat gcccagctgg gtgagttggc caaatccttg tggccatgag 480
gattccttta tggggtcagt gggaaaggtg tcaatgggac ttcggtctcc atgccgaaac 540
accaaagtca caaacttcaa ctccttggct agtacacttc ggtctagcca gaaaaaaagc 600
agaaacaaga agccaaggct aaggcttgct gccctgccag gaggaggggt gcagctctca 660
tgttgag
<210> 437
<211> 693
```

```
<212> DNA
<213> Homo sapiens
<400> 437
ctacgtctca accctcattt ttaggtaagg aatcttaagt ccaaagatat taagtgactc 60
acacagccag gtaaggaaag ctggattggc acactaggac tctaccatac cgggttttgt 120
taaagctcag gttaggaggc tgataagctt ggaaggaact tcagacagct ttttcagatc 180
ataaaagata attettagee catgttette teeagageag acetgaaatg acageacage 240
aggtactect etatttteac ecetettget tetactetet ggeagteaga ectgtgggag 300
gccatgggag aaagcagctc tctggatgtt tgtacagatc atggactatt ctctgtggac 360
cattleteca ggttacecta ggtgteacta ttggggggae agecageate tttagettte 420
atttgagttt ctgtctgtct tcagtagagg aaacttttgc tcttcacact tcacatctga 480
acacctaact gctgttgctc ctgaggtggt gaaagacaga tatagagctt acagtattta 540
tectatttet aggeactgag ggetgtgggg tacettgtgg tgccaaaaca gateetgttt 600
taaggacatg ttgcttcaga gatgtctgta actatctggg ggctctgttg gctctttacc 660
ctgcatcatg tgctctcttg gctgaaaatg acc
                                                                   693
<210> 438
<211> 360
<212> DNA
<213> Homo sapiens
<400> 438
ctgcttatca caatgaatgt tctcctgggc agcgttgtga tctttgccac cttcgtgact 60
ttatgcaatg catcatgcta tttcatacct aatgagggag ttccaggaga ttcaaccagg 120
atgtttctac acctgtgggt tatgacaaag acaactgcca aagaatcttc aagaaggagg 180
actgcaagta tatctggtgg agaagaagga cccaaaaaag acctgttctg tcagtgaatg 240
gataatctaa tgtgcttcta gtaggcacag ggctcccagg ccaggcctca ttctcctctg 300
gcctctaata gtcaataatt gtgtagccat gcctatcagt aaaaagattt ttgagcaaac 360
<210> 439
<211> 431
<212> DNA
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1)...(431)
<223> n = A,T,C or G
<400> 439
gttcctnnta actcctgcca gaaacagctc tcctcaacat gagagctgca cccctcctcc 60
tggccagggc agcaagcctt agccttggct tcttgtttct gctttttttc tggctagacc 120
gaagtgtact agccaaggag ttgaagtttg tgactttggt gtttcggcat ggagaccgaa 180
gtcccattga cacctttccc actgacccca taaaggaatc ctcatggcca caaggatttg 240
gccaactcac ccagctgggc atggagcagc attatgaact tggagagtat ataagaaaga 300
gatatagaaa attcttgaat gagtcctata aacatgaaca ggtttatatt cgaagcacag 360
acgttgaccg gactttgatg agtgctatga caaacctggc agcccgtcga cgcggccgcg 420
aatttagtag t
                                                                  431
<210> 440
<211> 523
<212> DNA
<213> Homo sapiens
```

```
<400> 440
agagataaag cttaggtcaa agttcataga gttcccatga actatatgac tggccacaca 60
ggatcttttg tatttaagga ttctgagatt ttgcttgagc aggattagat aaggctgttc 120
tttaaatgtc tgaaatggaa cagatttcaa aaaaaaaccc cacaatctag ggtgggaaca 180
aggaaggaaa gatgtgaata ggctgatggg caaaaaacca atttacccat cagttccagc 240
cttctctcaa ggagaggcaa agaaaggaga tacagtggag acatctggaa agttttctcc 300
actggaaaac tgctactatc tgtttttata tttctgttaa aatatatgag gctacagaac 360
taaaaattaa aacctctttg tgtcccttgg tcctggaaca tttatgttcc ttttaaagaa 420
acaaaaatca aactttacag aaagatttga tgtatgtaat acatatagca gctcttgaag 480
tatatatatc atagcaaata agtcatctga tgagaacaag cta
<210> 441
<211> 430
<212> DNA
<213> Homo sapiens
<400> 441
gttcctccta actcctgcca gaaacagctc tcctcaacat gagagctgca cccctcctcc 60
tggccagggc agcaagcctt agccttggct tcttgtttct gcttttttc tggctagacc 120
gaagtgtact agccaaggag ttgaagtttg tgactttggt gtttcggcat ggagaccgaa 180
gtcccattga cacctttccc actgacccca taaaggaatc ctcatggcca caaggatttg 240
gccaactcac ccagctgggc atggagcagc attatgaact tggagagtat ataagaaaga 300
gatatagaaa attcttgaat gagtcctata aacatgaaca ggtttatatt cgaagcacag 360
acgttgaccg gactttgatg agtgctatga caaacctggc agcccgtcga cgcggccgcg 420
aatttagtag
<210> 442
<211> 362
<212> DNA
<213> Homo sapiens
<400> 442
ctaaggaatt agtagtgttc ccatcacttg tttggagtgt gctattctaa aagattttga 60
tttcctggaa tgacaattat attttaactt tggtgggga aagagttata ggaccacagt 120
cttcacttct gatacttgta aattaatctt ttattgcact tgttttgacc attaagctat 180
atgtttagaa atggtcattt tacggaaaaa ttagaaaaat tctgataata gtgcagaata 240
aatgaattaa tgttttactt aatttatatt gaactgtcaa tgacaaataa aaattctttt 300
tgattatttt ttgttttcat ttaccagaat aaaaactaag aattaaaagt ttgattacag 360
tc
                                                                  362
<210> 443
<211> 624
<212> DNA
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1)...(624)
<223> n = A,T,C \text{ or } G
<400> 443
ttttttttt gcaacacaat atacatcaca gtgaaatgtg taatccttgc aaattgcaag 60
ttgaaagaat taaattcaga ggaggggaga gaaagagtac tcagtaggga ctgagcacta 120
aatgcttatt ttaaaagaaa tgtaaagagc agaaagcaat tcaggctacc ctgccttttg 180
tgctggctag tactccggtc ggtgtcagca gcacgtggca ttgaacattg caatgtggag 240
```

```
cccaaaccac agaaaatggg gtgaaattgg ccaactttct attaacttgg cttcctqttt 300
tataaaatat tgtgaataat atcacctact tcaaagggca gttatgaggc ttaaatgaac 360
taacgcctac aaaacactta aacatagata acataggtgc aagtactatg tatctggtac 420
atggtaaaca tccttattat taaagtcaac gctaaaatga atgtgtgtgc atatgctaat 480
agtacagaga gagggcactt aaaccaacta agggcctgga gggaaggttt cctggaaaga 540
ngatgettgt getgggteea aatettggte taetatgace ttggeeaaat tatttaaact 600
ttgtccctat ctgctaaaca gatc
<210> 444
<211> 425
<212> DNA
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1)...(425)
<223> n = A,T,C or G
<400> 444
gcacatcatt nntcttgcat tctttgagaa taagaagatc agtaaatagt tcagaagtgg 60
gaagettigt ecaggeeigt gigigaacee aalgittige tiagaaalag aacaagtaag 120
ttcattgcta tagcataaca caaaatttgc ataagtggtg gtcagcaaat ccttgaatgc 180
tgcttaatgt gagaggttgg taaaatcctt tgtgcaacac tctaactccc tgaatgtttt 240
gctgtgctgg gacctgtgca tgccagacaa ggccaagctg gctgaaagag caaccagcca 300
ectetgeaat etgecacete etgetggeag gatttgtttt tgeateetgt gaagageeaa 360
ggaggcacca gggcataagt gagtagactt atggtcgacg cggccgcgaa tttagtagta 420
gtaga
<210> 445
<211> 414
<212> DNA
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1)...(414)
<223> n = A, T, C or G
<400> 445
catgittatg nittiggatt actitigggca cotagigtit ctaaatcgic tatcaticti 60
ttctgttttt caaaagcaga gatggccaga gtctcaacaa actgtatctt caaqtctttq 120
tgaaattctt tgcatgtggc agattattgg atgtagtttc ctttaactaq catataaatc 180
tggtgtgttt cagataaatg aacagcaaaa tgtggtggaa ttaccatttg gaacattgtg 240
aatgaaaaat tgtgtctcta gattatgtaa caaataacta tttcctaacc attgatcttt 300
ggatttttat aatcctactc acaaatgact aggcttctcc tcttgtattt tgaagcagtg 360
tgggtgctgg attgataaaa aaaaaaaaag tcgacgcggc cgcgaattta gtag
<210> 446
<211> 631
<212> DNA
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1)...(631)
```

```
<223> n = A,T,C or G
<400> 446
acaaattaga anaaagtgcc agagaacacc acataccttg tccggaacat tacaatggct 60
tctgcatgca tgggaagtgt gagcattcta tcaatatgca ggagccatct tgcaggtgtg 120
atgctggtta tactggacaa cactgtgaaa aaaaggacta cagtgttcta tacgttgttc 180
ccggtcctgt acgatttcag tatgtcttaa tcgcagctgt gattggaaca attcagattg 240
ctgtcatctg tgtggtggtc ctctgcatca caagggccaa actttaggta atagcattgg 300
actgagattt gtaaactttc caaccttcca ggaaatgccc cagaagcaac agaattcaca 360
gacagaagca aaatacaggg cactacagtt cagacaatac aacaagagcg tccacgaggt 420
taatctaaag ggagcatgtt tcacagtggc tggactaccg agagcttgga ctacacaata 480
cagtattata gacaaaagaa taagacaaga gatctacaca tgttgccttg catttgtggt 540
aatctacacc aatgaaaaca tgtactacag ctatatttga ttatgtatgg atatatttga 600
aatagtatac attgtcttga tgttttttct g
                                                                   631
<210> 447
<211> 585
<212> DNA
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1)...(585)
<223> n = A, T, C or G
<400> 447
ccttgggaaa antntcacaa tataaagggt cgtagacttt actccaaatt ccaaaaaggt 60
cctggccatg taatcctgaa agttttccca aggtagctat aaaatcctta taagggtgca 120
gcctcttctg gaattcctct gatttcaaag tctcactctc aagttcttga aaacgagggc 180
agttcctgaa aggcaggtat agcaactgat cttcagaaag aggaactgtg tgcaccggga 240
tgggctgcca gagtaggata ggattccaga tgctgacacc ttctggggga aacagggctg 300
ccaggtttgt catagcactc atcaaagtcc ggtcaacgtc tgtgcttcga atataaacct 360
gttcatgttt ataggactca ttcaagaatt ttctatatct ctttcttata tactctccaa 420
gttcataatg ctgctccatg cccagctggg tgagttggcc aaatccttgt ggccatgagg 480
atteetttat ggggteagtg ggaaaggtgt caatgggaet teggteteea tgeegaaaca 540
ccaaagtcac aaacttcaac teettggeta gtacaetteg gteta
                                                                   585
<210> 448
<211> 93
<212> DNA
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1)...(93)
<223> n = A, T, C or G
<400> 448
tgctcgtggg tcattctgan nnccgaactg accntgccag ccctgccgan gggccnccat 60
ggctccctag tgccctggag aggangggc tag
                                                                  93
<210> 449
<211> 706
<212> DNA
<213> Homo sapiens
```

```
<220>
<221> misc_feature
<222> (1)...(706)
<223> n = A, T, C or G
<400> 449
ccaagttcat gctntgtgct ggacgctgga cagggggcaa aagcnnttgc tcgtgggtca 60
ttctgancac cgaactgacc atgccagccc tgccgatggt cctccatggc tccctagtgc 120
cctggagagg aggtgtctag tcagagagta gtcctggaag gtggcctctg ngaggagcca 180
cggggacagc atcctgcaga tggtcgggcg cgtcccattc gccattcagg ctgcgcaact 240
gttgggaagg gcgatcggtg cgggcctctt cgctattacg ccagctggcg aaagggggat 300
gtgctgcaag gcgattaagt tgggtaacgc cagggttttc ccagtcncga cgttgtaaaa 360
cgacggccag tgaattgaat ttaggtgacn ctatagaaga gctatgacgt cgcatgcacg 420
cgtacgtaag cttggatcct ctagagcggc cgcctactac tactaaattc gcggccgcgt 480
cgacgtggga tccncactga gagagtggag agtgacatgt gctggacnct gtccatgaag 540
cactgagcag aagctggagg cacaacgcnc cagacactca cagctactca ggaggctgag 600
aacaggttga acctgggagg tggaggttgc aatgagctga gatcaggccn ctgcncccca 660
<210> 450
<211> 493
<212> DNA
<213> Homo sapiens
<400> 450
gagacggagt gtcactctgt tgcccaggct ggagtgcagc aagacactgt ctaagaaaaa 60
acagttttaa aaggtaaaac aacataaaaa gaaatatcct atagtggaaa taagagagtc 120
aaatgaggct gagaacttta caaagggatc ttacagacat gtcgccaata tcactgcatg 180
agcctaagta taagaacaac ctttggggag aaaccatcat ttgacagtga ggtacaattc 240
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gttccagaat tattggtcct tgcagcccgg tgaatctcag caagaggaac caccaactga 180
caatcaggat attgaacctg gacaagagag agaaggaaca cctccgatcg aagaacgtaa 240
agtagaaggt gattgccagg aaatggatct ggaaaagact cggagtgagc gtggagatgg 300
ctctgatgta aaagagaaga ctccacctaa tcctaagcat gctaagacta aagaagcagg 360
agatgggcag ccataagtta aaaagaagac aagctgaagc tacacacatg gctgatgtca 420
```

cattgaaaat gtgactgaaa atttgaaaat tctctcaata aagtttgagt tttctctgaa 480 gaaaaaaaaa naaaaaaaa aaanaaaaan aaaaa 515

			Y :
•			•
,			
	*		-
			2 00 - 00

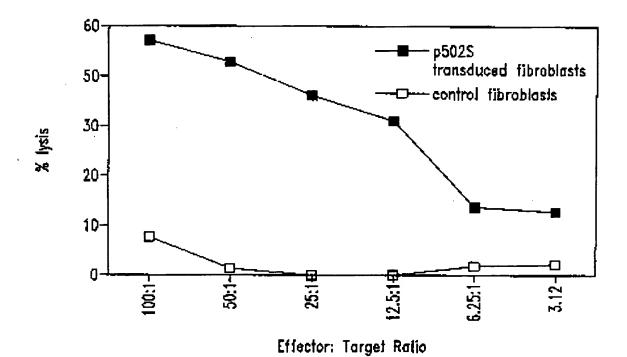


Fig. 1

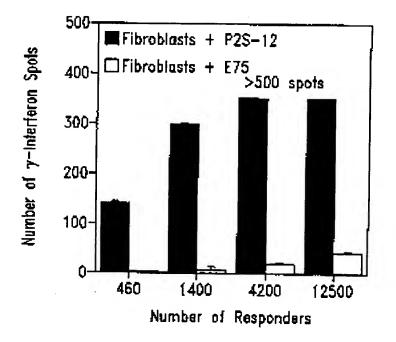


Fig. 2A

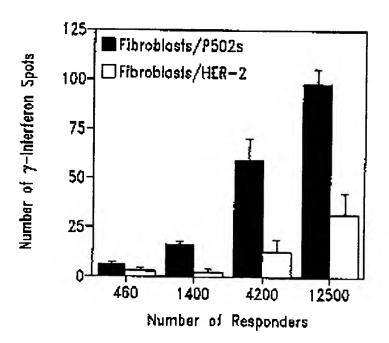
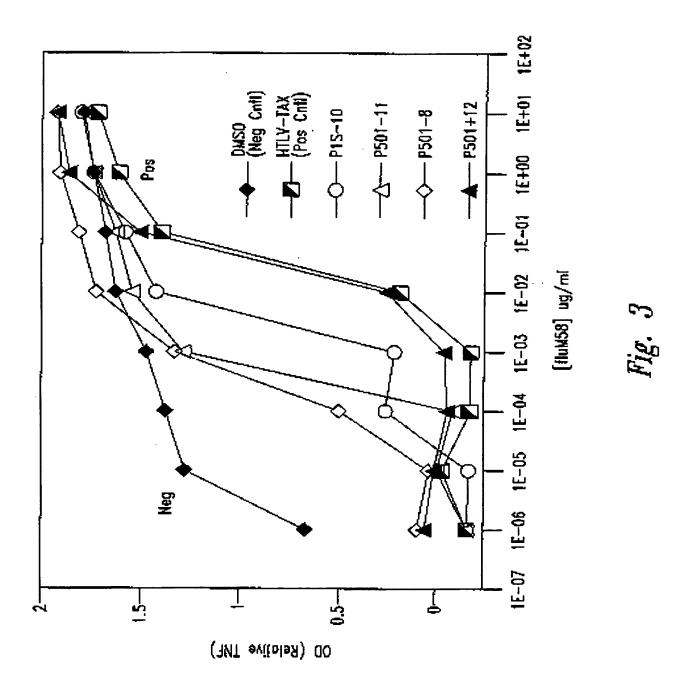


Fig. 2B

SUBSTITUTE SHEET (RULE 26)



SUBSTITUTE SHEET (RULE 26)

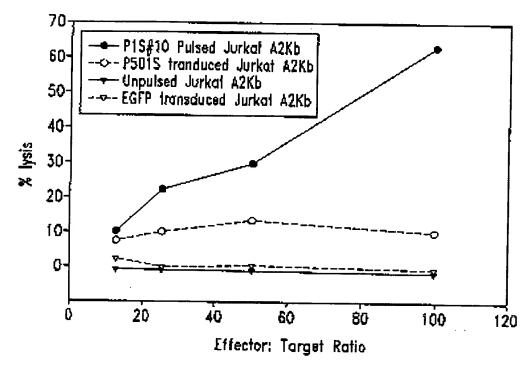
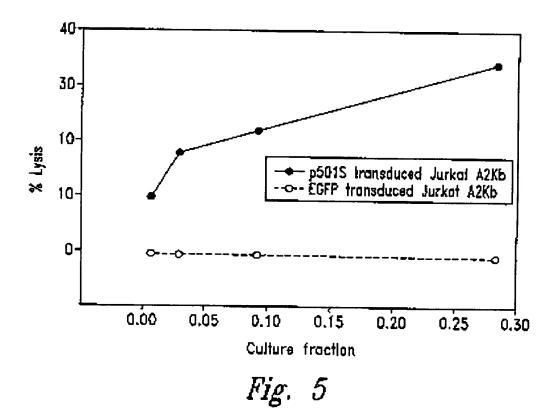
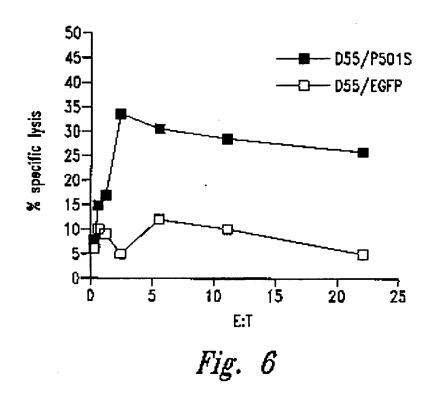
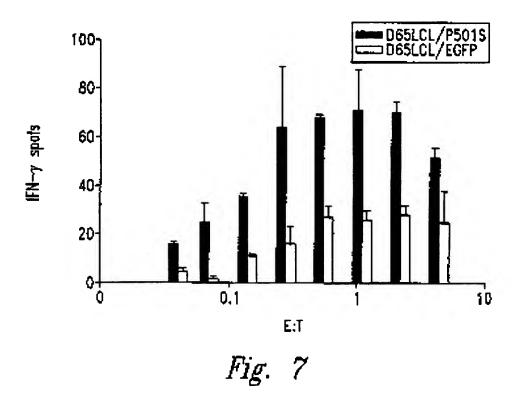


Fig. 4



SUBSTITUTE SHEET (RULE 26)





SUBSTITUTE SHEET (RULE 26)

SEQUENCE LISTING

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       <120> COMPOUNDS FOR IMMUNOTHERAPY AND DIAGNOSIS
        OF PROSTATE CANCER AND METHODS FOR THEIR USE
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                                                                       420
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                                                                       720
actoctossa ggnggtatta cggttatech naastonggg gataccongg aassaanttt
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аасаявадду сяпсавадду слуавасута аава
                                                                       814
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                                                                       54 D
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                                                                       340
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                                                                       COE
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gagagattag cotamicate greatenath thracteter gazetters taugatages
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atteracara acatargane eggamacata auntgtamae elggggtger taatgantga
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                                                                        650
concettgeat inaigaaten gedaaddeed ggggaaaage giltgdgitt igggegriet
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      <212> DWA
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                                                                        24D
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                                                                        780
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ggtttgctcc acagatttca gageattgac cgtagtatac ccccggtcgt gtagcggtga
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aggatnictt ngugatgyga aggonætnæa ggastangga thaatggogg gcangætett
                                                                       540
treaarngto totanttoot gasacgtotg assigttest esneettesn titngttatt
                                                                       600
quatnttnny gassaggget tacaggacta yaamccamat mngammanta atmntaangg
                                                                       66D
                                                                       720
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                                                                       817
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                                                                       480
tetttqangt gageeccatg tecatetggg ceaetgteng gacracettt ngggagtgtt
                                                                       54 D
cticitaces indecennate congected congessade anticodence tengesegget
                                                                       600
canqueetgn atceactant netanaaceg gerneenceg engaggaace cacculatgu
                                                                       660
toottttoot thagggttaa thhogoottg gootthooan natoothone officennt
                                                                       720
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                                                                       660
gggaanance etegnernin coccentia teceneetig enangement eccerentee
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necennating gentations coassagge commancas tetectanes ecteanites
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CCancetteg manteggeen e
                                                                       801
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      42115 7B9
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acceeggese ceenangggg gttäädägga anengggnaa entggaacce äättmaggen
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                                                                       750
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                                                                       360
agcagetgen aceteagraa tgaagatgan gaggangatg aagaagaacg tenngaggge
                                                                       420
acacttgctc tcagtcttan caccatanca greentgaaa accaananca aagaccarna
                                                                       480
enreggetge gatgaagaaa thaccconng tigacaaact tgeatggeac tgggancoac
                                                                       540
agtegeccna adaatettoa aasaggatge recatenatt gacceccaa atgreceartg
                                                                       600
ccascagggg cigccccach chondadga tganconatt gnacaagate thontagtot
                                                                       660
tnatnazent gaaceetgen tngtggeten tgtbeaggne ennggeetga ettetnaann
                                                                       720
aangaacton gaagnoocca engganznno g
                                                                       751
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      c211> 729
      <212> DNA
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<213> Nomo Bapien

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       c223 > n = A, T, C or G
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tgigganeet cageagines ciclitonga actonitgee anganeects ancaggagee
                                                                         120
accetgoagt getteagett cattaagace atgatgatee tetteaattt geteatettt
                                                                         180
etgigigig cagccetgit gocaqtqqgc ateiqqqiq caalcqatqq qqcalcetti
                                                                         240
ctyangatet tegggeenet gregreeaut gecatgeagt trateanegt gggetnette
                                                                         300
ctcategeag ceggegttgt ggtettaget etæggtttee tgggetgeta tggtgetaag
                                                                         350
actgagagea agtgtgecot ogtgacgtto ttottcetce tectecteat cttcattget
                                                                         420
gaggttgcaa tgctgtggtc gccttggtgt acaccacaat ggctgagcac ttcctgargt
                                                                         480
tgctggtaat gcctgccatc aanaaaagat tatgggttcc caggaanact tcactcaagt
                                                                         540
gttggaacac caccatgaaa gggctcaagt gctgtggctt cnnccaacta taoggatttt
                                                                         600
gaagantcac ctacttcama gammanagtg cettteccec atttetgttg camtgacaa
                                                                         660
acgterreas racageesat tgassacetg caccesacer asangggtee cessecanas
                                                                         720
attnaaggg
                                                                         729
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tgttcgctqu aggggttgta gtaccagegc gggatgctct ccttgcagag tcctgtgtct
                                                                        120
ggcaggtera egragtgeen tététemetg gggmantgga tgegntggmg etegteaamg
                                                                        180
ccactogtat attiticaca ggcagceteg tengargeat ogggggagt gggggtgtet
                                                                        24 D
tracactora ggaaactgto natgragoag coattgrige agregaactg ggigggriga
                                                                        300
canglectay agracactes ategrescent treatennam syspections granastere
                                                                        360
tganecccan andtgeetet caaangeece acettgeaca eccegacagg etagaatgga
                                                                        420
atottettee eganaggtag tenteringt tecccaance aneccentaa acaaactete
                                                                        480
granatetge teognggggg tentantace anegtgggaa aagaacceea ggengegaac
                                                                        540
caancitett tegatoogaa genataatet neintietee tiggiggaea geaccantna
                                                                        600
etginnanci ttagnochty giddienigg gitgnmetig aacctaaton connicaact.
                                                                        660
gggacaaggt aantngcont critinaatt cocnanenin coccetggit tggggittin
                                                                        720
enemetecta deceagasan neogigiter cerceaacta ggggdenasa cennitnite
                                                                       780
Caceaccetn receasesas gggttengnt ggttng
                                                                       816
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      <211> 783
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     <222: (1)...(783)
      <223> n = A,T,C or G
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                                                                         120
angacceala ccaggiggaa clotggggac tcaaggaang cacctaccig ticcagciga
                                                                        180
cagigaciag cicagacore cragaggara cggccaacgi cacagirant gigcigicca
                                                                        24 D
ecaagragae agaagaetae tgeetegeat eraacaangm gggtegetge eggggekett
                                                                        300
toccacgots stactatgae ceracggage agatetseaz gagtttestt tatggagget
                                                                        G&E
gettgggcaa caagaacaar tacctteggg aagaagagtg cattctance tgtcnggotg
                                                                        420
tgcaaggtgg gootttgama ngcanetcig gggotoange gaettteccc cagggeocet
                                                                        480
coatggaaag grgccatcca ntgttctctg gcacctgtca gcccacccag ttcrgctgca
                                                                        540
ncastggolg objections antitioning satisfigures are concord nigococcas
                                                                        600
coctoccaec eaagettecc tgttneaaaa tacnecantt ggettttnac aaacnecegg
                                                                        660
enceteenth thecoennin ascassgge neingentit gasetgeeen saccinggas
                                                                        720
totnochingg aaasantnoc coccetggit colinaance cotconomia anctrocced
                                                                        7B0
                                                                        783
      <210> 1.6
      <211> 801
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_featu<del>re</del>
      <222> (1)...(801)
      \langle 223 \rangle n = A,T,C or G
      <400> 16
generatic caggigouae accardeacy gigacigost tagitrogat giuatacaaa
                                                                         6□
agotgatiga agoaaccte tactittigg togtgageet titigotiggt geaggittea
                                                                        120
ttggctgtgt tggtgacgtt gtcattgcaa cagaatgggg gaaaggcact gttctctttg
                                                                        180
eagtagggtq agtoctomma atorgtateg ttggtgaago caragoectt gagoecttto
                                                                        240
atggtggtgt terscacttg agtgmagtet teetgggaad datmatettt ettgalggea
                                                                        300
ggcactacca geatesters grantseter accettates tgtacacca agogaeraca
                                                                        36 D
gcagctgraa cctcagraat gaagatgagg aggaggatga agaagaacgt cncgagggca
                                                                        420
carttgourt regiotings accatagong occanguas caagagonsa gaccacaacg
                                                                        480
congolgrga algamagemen niacodacgi igacamacty catygocaci ggacgacagt
                                                                        S40
Eggcccgken atcttcages sagggatgcc ccategattg ascacccana tgcccactgc
                                                                        600
cnacaggget gencenenen gaaagaatga gecattgaag aaggatente ntggtettaa
                                                                        660
tgaactgaaa contgoatgg tggcooctgt tomgggotot tggcagtgaa ttotganaaa
                                                                        720
aaggaacnge ninagecood duamangana aaacaceddo gggigiige eigaatigge
                                                                        780
ggccaaggan coctgeeern g
                                                                        801
      <210> 17
      <211> 740
      <212> DNA
      <213> Homo sapiem
      <220>
      <221> migc_feature
      <222> (1)...(740)
      <223> n = A,T,C or G
      <400> 17
gtgagagera, ggegtmeete tgeetgeeca etcagtggea acaccoggga getgttttgt
                                                                         60
```

```
cetttgtgga gretrageag ttecetett cagaacteae tgecaagage ectgaacagg
                                                                         120
 agecaceatg cagigettes getteattas gaccatgatg stentettes attigetest
                                                                         180
 cutteretat agraces tottogesat agaesterag atarester staggarate
                                                                         240
 ctttetgaag atetteggge eactgregte cagtgeeatg cagttigtea acgtgggeta
                                                                         300
 cttcctcate geageeggeg ttgtggtctt tgetettggt ttcctggget gctatggtge
                                                                         360
 taagacggag agcaagtgtg cootcgtgac gttcttcttc atcetcctcc teatettcat
                                                                         420
 tgotgaagtt geagetgrig tggt.cgcett ggtgtacacc acaatggeig aaccattret
                                                                         GRD
 gacgitgrig giantgcolg coatcaansa agettatggg tirccaggaa aaattcacto
                                                                         540
 aenthiggue cacchocatg aaaagggoto caatttetgh togottecco aectateorg
                                                                         600
 gaattttgas aganteneed tacttecaas assesanant tgertttnee ccenttetge
                                                                         660
 tgcaatgaaa acnteecaan acngeeaatu aaazeetgee Conneaaaaa ggotencaaa
                                                                         720
 czasazzant mnaagggttn
                                                                         740
       <210> 18
       <211> 802
       <212> DNA
       <213> Homo sapien
       <220>
       <221> misc_feature
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       \langle 223 \rangle n = A,T,C or G
       <400> 18
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                                                                         60
caaggictic cageigeege acattacgca gggcaagage ctccageaac actgcataig
                                                                        120
gentaractt tartttagna geoagggtga caantgagag gtgtcgaage ttattettet
                                                                        180
gageetetgt tagtggagga agatteeggg etteagetaa gtagteageg tatgteecat
                                                                        24 C
aaguaaacae tgigageage uggaaggiag aggeaaagid acteleagee agdictelaa
                                                                        300
cattgggcat gtccagcagt teteraaaca cgtagacace agnggcctuc agcaretgat
                                                                        360
ggatgaqtgt ggccagcgct gcccccttgg ccgacttggc taggagcaga aattyctcct
                                                                        420
ggttetgree tgtekeette acttergeae teateketge actgagtgtg ggggarttgg
gctcaggaty tocagagary tygttcogco ocetrnetta atgacacego ccanneaace
                                                                        480
                                                                        54 D
steggetere geegentang tregtegtne etggateaga gretaetaac eneracttae
                                                                        600
aancttogto nggeoratgg aattoacono acoggaactn gbangateea cinntietat
                                                                        660
asceggnege cacegennut ggasetecae tettuttuee tetaettgag ggttaaggte
                                                                        720
accottonog tracertogi coassocoto contgigiog ansinginaa tonggocona
                                                                       780
thecancene atangaagee ng
                                                                       802
      <210> 19
      <211> 731
      <212> DNA
      <213> Homo sapien
      <220⊳
      <221> misc_feature
      <2225 (1)...(731)
      <223> n = A,T,C or G
      <400> 19
cnaagettee agginaeggg eegenaanee igaeeenagg taneanzang ragnengegg
                                                                        ₽D
gageceaceg trangmagny ungtetttat mggagggge ggagecacat enetggaent
                                                                       120
entgacccca actoeccnee nencantgoa greatgagte caquactgaa eginaceteg
                                                                       180
caddraccas dancaeeuun tactecuure ceebtoadeu uadamaduad Aactadecae
                                                                       240
geneateent enagtgetgn aaageeechn cetgtetact tgtttggaga aengennnga
                                                                       COL
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catgodeagn gilanataac nggongagag thantlityoc tetecettee ggotgegean
                                                                       360
rgngthtget tagnggarat ascetgaets ettametgaa eennagmate theenceet
                                                                       420
ccactaaget cagascaaaa sacttegaca ccactcantt gtozeetgne tgutumagta
                                                                       480
asgigiacco daineceaat ginigolnga ngololgnes igentlangi ieggicolgg
                                                                       540
gaagacctat caattnaagu tatgtttetg actgcctctt gotccetgna acaamonaec
                                                                       600
concentrate agggggger ggcccccaat coccccaacc nineatioan ittancccon
                                                                       660
ecoconggee eggeetttia enamentenn nnaengggna aaarennoom titnoccaar
                                                                       720
nnaatconce t
                                                                       731
      <210> 20
      <211> 754
      <212> DNA
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      <220>
      <221> misc_feature
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                                                                       60
caacerectr ntccaaatum contiteegg gngggggttc casacecaan ttannittgg
                                                                      120
annttaaatt aaatnitoni iggneynna anconaatgi nangaaagti naacccanta
                                                                      180
thanctthea theological conglogatt coassaatut thasecotta antecotors
                                                                      240
amaingting nygammacc ampitetent maggingtit gamagning inmammacc
                                                                      300
nucceattyt tttingcosc gootgaatta attggnttoe gntqttttoc nttaamana
                                                                      360
ggmnanecce ggttantnæa teccecenne eccanttata ceganttitt tingaatigg
                                                                      420
gancconegg gaattaacgg ggnnunteer thttgggggg enggnneces cecenteggg
                                                                      48D
gyttngggnc aggnennaat tytttaaggg teegaaaaat eesteenaga aaxaaanete
                                                                      540
ccaggntgag natngggttt accecccc canggeeret etequanagt tggggtttgg
                                                                      600
ggggeetggg attituttte eccintinee teeggeece cenggganag aggtingngt
                                                                      660
tttgntcnnc ggocccneco aagenotttu coganttman ttaaatecot goctoggoga
                                                                      720
agteentign agggntäään ggeeceetnn eggg
                                                                      754
      <210> 21
      <211> 755
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1) ... (755)
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                                                                       60
nngthagnno actnonntto natoachece encenactae geconchane enaegeneta
                                                                      120
nncanathee actgannges egangthgan ngagaaaset nataccanag neaccanaen
                                                                      1.B0
CCASCISTOR DANAENGECT DANAESCORG DODAECCORT DISPLACED CORRECTED
                                                                      240
nnenneanat gattteetn ancegattac controcece tanccoctoc eccesaena
                                                                      300
Chargenet generally misegnence regetagate commeast enchenceta
                                                                      36D
sactdandon hattablego ttootgagta toactdeeg aatoboacco tzcteaacto
                                                                      420
addanaten gatacasaat aatocaagee typttatnae aetotgaety gytetetatt
                                                                      480
tragnggtoc ninaanchic craatactic cagterness tenecealty conaangest
                                                                      540
otttengaca geathfittig giteconnit gggitettin ngaattgeed tichtngaac
                                                                      600
```

```
gggetentet thiceticgg trancetggn trennacego cagitatiat thecemitti
                                                                        660
adattenthe entitantit tygenhiene adecceegge ethgadadog gereentggl
                                                                        720
aazaggtigt titganasaa tittigtiit giicc
                                                                        755
      <210> 22
      <211> 849
      <2125 DNA
      <213> Homo sapien
      <220×
      <221> misc_feature
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      <223> n = A,T,C or G
      <400> 22
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                                                                         бδ
acgcinggan taangrgadd Cquuttotag gammcmdddt amaatcanad tgigaagatn
                                                                        120
attentionna eggmanggte accggnngal nutgetaggg tgmcchetec cannocattm
                                                                        180
cataacteng nggeeetgee caccacette ggeggeeeng ngneegggee egggteattn
                                                                        240
gnottaecon dadinigona neggittoon neducineng acconggoga teegggging
                                                                        300
tetatettee retgnagnen anakantagg reneggneen etttaceest mnackagees
                                                                        G&E
engeenheta nechengeee eccetecant nngggggaet geenannget eegtineing
                                                                        420
miacecennn aggineeteg gitigicgamit enacegnang coamagantic chaaggaagg
                                                                        480
tgegtintig geogetades tiegetnegg nncaccette eegachanga neegeteeeg
                                                                       540
chantegring estancetes sacacooge metantengt negginness secsacooge
                                                                       600
neertenene ngmegnamen etecneenee gteteannem cezeceeger cegeozoggee
                                                                       660
ntcancesch genngaenng nagenennte geneegegen gegneneest egeenengas
                                                                       720
etnentengg ceantonege tesanconna enasaegeeg etgegeggee egnagequee
                                                                       780
necteerings gleeteegh etternaced anguattern egaggadsca unacceegee
                                                                       840
ппсалдедд
                                                                       849
      <210> 23
      <211> 872
      <212> DNA
      <213> Home sapien
      <220>
      <221> misc feature
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      \langle 223 \rangle n = A,T,C or G
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                                                                        €0
totgachane regatingge ngatutenan aagningane agtreaazet gambaccaca
                                                                       120
cacecnonan aganzaatee netgeettee anagtanzen attgeaching agazeange
                                                                       180
nggrgaateg taatneggeg tgegeegeea atniglence gittatinin ceageniene
                                                                       24 D
Cindenseco taentetten nagolgionn accortagin ognacecce naggiogga
                                                                       300
tegggittinn notgacegng enneerator occenterat nacganeene eegeaceaer
                                                                       36D
namingenege necessanich obtogeoner etgianitatu eccetyinga atggununga
                                                                       120
accgcattga cootegeenn etnemngaaa negnanaegt eegggttgun annamegetg
                                                                       480
taggonngeg tetgeneege gtteetteen nennetteen eestettent taengegtet
                                                                       540
concepente tenunesche entgggadge intectnige decesional telegoott
                                                                       600
egnegigned egnecodado nicalitada nacentotic acaanoned; geninacio
                                                                       660
coenciques atcamecaed adsessands abuncants officeatts adsoderate
                                                                       720
egaanemico ichoconicăm choiaecect ogggognmet etengiinec aactiancaa
                                                                       780
```

```
ntercerceg agagements toaquetone conceenst statgement instatgets
                                                                       HAD
thaccontec ganthitiegh encertaitt co
                                                                       872
      c210> 24
      <211> 815
      c212> DNA
      <213> Homo sapien
      <220>
      <221 > misc_feature
      <222> (1)...(815)
      <223> n - A.T.C or G
      <400> 24
gestgerage tigagistic tetagogica cetasatane tiggentaat esiggionia
                                                                        តឲ្
nctgncttcc tgtgtcaaat gtatacnaan tanatatgaa tetnatniga caaqanngta
                                                                       120
tentheatta gtaacaantg tuntqteeat retgtengan canatterca tuna(tuegn
                                                                       180
egeattenen geneantatu taatngggaa ntennutnon neacconcat etateotnee
                                                                       240
scheerigae tygnagagat ggathantte thototgace nacatyttea tettggatto
                                                                       300
aananceree egengneeas egetinging enageminte reaaqaeete etstegaggt
                                                                       360
escotgogto agannoatos sacritgadas accogennes analymaset nennnesnen
                                                                       42D
gateregire aggnethace atcoeffene agegoeecet tingigecht anagngnage
                                                                       480
gtgtccnanc unctemment ganacgogod agnocances caattnggem comtgtconc
                                                                       540
gadeneeta gggggantno theadaneer caggattgte enencangaa attetenane
                                                                       600
connected Connetting garnginger, aantorongs gincoagtor agreenments
                                                                       660
Geceaeeggt nncentgggg gggtgaanet engnateang engneqaaga ntegnaaga
                                                                       720
accognects gancakanny amenatenga agageenent egiataacee eccetencea
                                                                       780
nccasconnt agniences engggincyg mangg
                                                                       815
      <210> 25
      s211> 775
      <212> DNA
      <213> Homo septen
      <220>
      <221> Misc_feature
      <222> (1) ... (775)
      <223> n = A,T,C or G
      <400× 25
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                                                                        60
aggotatota yegtarteea aagattoagg titactracg toatodaqoa gagaatggaa
                                                                       120
agteaastit cotgestigo tatgigicig ggillicatee alcegacatt gaantigact
                                                                       180
tectgaayan tgganagaga attgaaaaay tggagcatto agacttqtot ttcagcaaqq
                                                                       240
actggtcttt CtatCtCntg tactacactg ealtCacccc cactgasasa gatgagtatg
                                                                       300
detgregtgt gaaccatgtg actitgteme ageccaagat agitaagigg gategagaea
                                                                      360
tgtamgCagn chncatggaa gtttgamgat gCcgcatttg gmttggmtgm attccmamt[
                                                                      420
etgettgett gentittaat untgatatge niatacadde taccettaat gnouecaaat
                                                                      480
Ugtaggggtt acatmantgt tementagga catgatette etttataant cencenttem
                                                                      540
aattgroogt chocongttn ngaatgitto consacoarg gitggricon coaggioner
                                                                      600
tottaeggaa gggeetggge enctttmema ggttggggga weenaaastt tenettnige
                                                                      ស្សា
dendadade duntetting incheantit ggaecotte enaticedet tigeetenne
                                                                      720
neettmeta amazaactin adamoginge maaamniilu aetteereer tiacu
                                                                      775
```

```
<211> 828
       <212> DNA
       <213> Homo sapien
       <220>
       <221> misc_fcature
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                                                                         60
cocenagata nettatanca acagegette gacceegage egetgggeac atttccetgea
                                                                        150
gaaaaggtgg rggtccrcat cactcctoot otoccatagc catcccagag yggtgagtag
                                                                        180
 ccatcanged thoughtgage aggregates gasscaache accaeagage anacagacem
                                                                        240
ntgatgarca tgggcgggag cgagcotott cootgnaccg gggtggcana nganagcota
                                                                        300
notgaggget cacactataa argitaacga comagathan caccigotir aagigcacce
                                                                        360
ttootacetg acmaccagng accommaact gengoetggg garagenetg ggancageta
                                                                        420
achmageact caccingcode recatggeeg thegenticed tygicotyne sagggaaget
                                                                        980
ecctgttgga attnegggga лассавдоры пессестест ссалстдтры жудаваахлл
                                                                        540
gatggaatht indoctions goonstocce tettectite caugueocci intactonic
                                                                        600
tecetetatt ateetgaene actititasee demandatte ectimatiga tegganacia
                                                                        ៤៩០
ganatteeae innegecine entenatong naanacmaaa nactotetna coengggat
                                                                        720
gggnnddiog micateciel etititenet acchdennit etitgeetet cetingatea
780tcrascente gntggcentn coocconno tecttinece
820
       <210> 27
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       <212> D00A
       <213> Homo sapien
       <220>
       <221> misc_feature
       <222> (1)...(818)
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       <400> 27
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                                                                        60
tytttettet cegageecca ggeageggts atteageect geecaacety attetgatga
                                                                        120
ctgcggatgo tgtgacggac ccaaggggca aalagggtoo cagggtocag ggaggggogo
                                                                       180
etgetgagea etteugeded teacudiger cagederige catgagetet gggetgggte
                                                                       240
tocacctuca aggittetect citecanges naccanemag taggeetagg coacactage
                                                                       300
ttetteriga countedety gotetgante tetgicitae igidetytge angeneattg
                                                                       360
Adhereaget tecetenete anngaactet gittergann tetteantis actniganti
                                                                       420
tatnacchan tgynotgtoc tgtennactt taatgggcon gacoggetza tecotocoto
                                                                       460
netecettee anticommus accongetime ententetee contanceus congagaane
                                                                       540
ctcctttgcc ctnaccangg gccnnnaccg cccntnnctn ggggggenng gtnnctncnc
                                                                       6UO
etgninnece encleaeaut toestegier ennennegen angewantte nengteeenn
                                                                       660
thretetten ngintegnas ngmignente inmongnen ngminning tecetetene
                                                                       720
countyness tiluttannoc acagameter annocanani agganotano tetacaeage
                                                                       780
 commerce ngnattaagg colocintot ceggeene
                                                                       818
       <210> 28
       <211> 731
       <212> DNA
```

```
<213> Homo sapien
      <220×
      <221> misc_foature
      <222> (1)...(731)
      <223> n = A.T.C or G
      <400> 28
aggaagggcg gagggetatt gtengggatt gagggatagg agnateangg gggaggtgtg
                                                                        60
toccaacatg anggigningt tototttiga angagggitg ngtittiann ochggigggt
                                                                       120
gattmaacce cattgtatgg egnnaaaggm tttmagggat ttttcggcte ttmtcagtat
                                                                       180
ntanattoot ginaalogga aaalnainii tommonggaa aalniigele coaleegnaa
                                                                       240
attockcog ggtagtgdat Olthøggggn engecangit teddaggdig cianaategt
                                                                       300
actuagentt naagtgggen tocamatgaa escotnouae agagnateen tscougaptg
                                                                       360
tunnttmeet tegecethig ectetgenny agercaatae connyngmat gieneemigh
                                                                       420
inniquencia temaninina tegnegetan gancatuang gegettegea teaaaagena
                                                                       4 B Q
egittenest maaggeactt thegestoate twaceneing cooleanees titingeogic
                                                                       540
ngyttomeet aegetnning encetnning ganabittine eegeeinggg naanceteet
                                                                       600
gneatgggta gggnettnic ittlinaccou gogginiact aatennotoe accentoct.
                                                                       660
tolonacco coccettiti caatoocano ggonealggg gtotocoonn oganggggg
                                                                       720
nnneceanne e
                                                                       73±
      <210> 29
      <211> 822
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(822)
      <223> 11 - A.T.C or G
      <400> 29
autagtocag tgtggtggaa ttocattgtg ttgyygnone ttotatgant entnttagat
                                                                       БQ
egeteanage teacancete Commenange etataangaa nannaataga netginenni
                                                                       120
stotateme testamment emmacedes tesetettas ecentactgt gestatogen
                                                                      180
innotantet nigeogeein chanceacen gigggeense chennyhatt etenatetee
                                                                      240
tenecatnin geetamania ngincataco Ciatacetae necaaigeta nnoctamen
                                                                      300
trostnantt ennotaacta coactgarot ngartttono atnanctort aatttgaato
                                                                       360
tactetgact cceachgect annhattage adenteered nachathtet caaceanate
                                                                       420
ntcaaraacc Catchancts ttenedaacc ntincetoog atooconnac aaccrecete
                                                                       48D
ceasatacco necaccigae nochasecon exceateceg gesagechan gyneattian
                                                                      540
ccactggaat daunatngga naangaaaac ccnaectoto tanenennat etcectaana
                                                                      600
pathetecth meathtacth meanthcust esameceach tgsaachnes eccetettt
                                                                      660
tanatecett etttegaaaa renaceettt annneceaae ettingggen ceceeneine
                                                                      720
consatigaeg gnoncocaat changeency noontgeess ancheggons enanntcog
                                                                      760
canatectat recttameth ggggncoott nucenngged co
                                                                      922
      <21U: 3D
      <211> 787
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
```

42225 (1)...(787)

```
<223> n - A,T,C or G
      <400> 30
eggeegeetg etetggeaca tgcctvotym atggesteam aagtgalgga etgereattg
                                                                         60
chagagaaga cottetetee tactgtcatt atggagecet gemgactgag ggcteecett
                                                                        120
gtotgoagga titgatgtot gaagtogigg agigiggett ggagotooto atclacatna
                                                                        180
golggaagon otggagggod tetologeda godhooddot tolologaagg dholggangg
                                                                        24 D
acaccagggg ctccaggcag cocattatto coagnanged enggtgttto teceoggga
                                                                        300
recatgggge otgnwagged agggteteet tigaracemt eteteergie cigoetggea
                                                                        36D
ggeegtggga treactanth chanaeoggn ogeoaconeg gtgggagete cagettttgt
                                                                        420
tecentiaat quaggitaat igenegettg gegiaateat nggicanaac intitectgi
                                                                        4RO
gtgaaattgt tinicccctc ncnattconc ncnacatach aacccggaam cataaagtgt
                                                                        540
teaagcoigg gagingcoin ongeathead theactoast tastigogit ggotoatage
                                                                        500
engettteen ttenggamaa digiontees etgentinni gaateggesa recreenggg
                                                                        660
amangeggit tgentiting ggggniectt ennetteece cetenetaam enetnegeet
                                                                        720
eggtegtine nggtngeggg gaangggnat nnoetecene naagggggng agnnogntat
                                                                        780
CCCCBBB
                                                                        787
      <21D> 33
      <211> 799
      <2125 DNA
      <213> Homo sapien
      <220×
      <221> misc_feature
      <222> (1)...(799)
      \langle 223 \rangle n = A,T,E or G
      <400> 31
tittitttt iittitteggo gatgetaetg titaatiges ggaggigggg gigtgigtad
                                                                        БÚ
catqtaccag ggctattaga agcaagaagg aaggagggag ggcagagggc cctgctgagc
                                                                       120
aacaaaggac tentgoagoo ttototgtet gtetettggd gdaggoacat ggggaggodt
                                                                       180
cccqcaygyt yyyggccacc agtccagggg tgggagcact acanggggtg ggagtgggtg
                                                                       240
gtggetggtm chaatggoot gnoacanate cetacgatte ligacacets gattteacca
                                                                       300
ggggacctto tytteterca nggmaactte ninnatoten aazgazeara actytitett
                                                                       360 ·
engeantiet ggetgtückt qykkassokek ggtgtennat tünggetggg acttggtkok
                                                                       420
tatggttouy sectacetet reentenaan aagtaattea ecececcon contetning
                                                                       480
cctgggccct teantaccca caccggmaet canttantta ttcatcting gntgggcttg
                                                                       540
nunateneou cetgaangeg ceaagttgaa aggedaegee ginccenete edeatagnan
                                                                       600
nttttnnent candtaatyd docceengge aacnaticaa toodeecen tgggggdddo
                                                                       660
agoddanggo occegnetog ggnnnochgn onognantee ccaggntoto coantengno
                                                                       720
cenningence decideacide gaacanaagg ningagedne egeanninnin ngglinichae
                                                                       780
ctegeeeee cennegnng
                                                                       799
      <210> 32
      <211> 789
      <212> DNA
      <213> Homo gapien
      <220ء
      <221> misc_feature
      <2225 (1)...(789)
      <223> n = A,T,C or G
```

```
<400> 32
nthintheth thanthopto titetiette titethans, bettettett ettethouse
                                                                                                                                         60
tittnochag ggoaggitta iigacaacci chogggaeac aancaggoig gggaeaggae
                                                                                                                                       120
ggeaacagge teeggeggeg geggeggegg cectacetge ggtaccauut ntgcageete
                                                                                                                                       180
egeteceget tgathiteet etgrag@tg@ aggatgcent aaaacagggc ct@ggcentn
                                                                                                                                       240
ggtgggcace etgggatttn &atttoeing ggcacaatge ggteqemmec erteaccace
                                                                                                                                       300
nattagynat agiggintta rechechqua tiggendaet cereniggaa aceaetinic
                                                                                                                                       360
gaggateegg catalggtal baawootige aasenetggg goverettit iggitaatal
                                                                                                                                       420
ncongueaca ateatomete agaetggene qygetggeee caamaamen eeecaamaee
                                                                                                                                       180
ggndeatgle tinnnggggt tydtgenath incateacct dudgggenea neaggndaac
                                                                                                                                       540
commanytto ttgnggoeon eamammandt Obygggggne comptitione Cammageate
                                                                                                                                       600
conditigged addabated: decoegnft netgggthtig ggazecolog coleinnett.
                                                                                                                                       660
tygonggeam gotggoteer effteggged bouggtggge commondtae ngammaenee
                                                                                                                                       720
oficitronica coatoccccc impenacyne tancaangna teceptitit tanaaacygg
                                                                                                                                       780
ceceeineg
                                                                                                                                       789
            <210> 33
            42115 793
            <212> DNA
            <213> Homo Bapien
            <220>
            <221> misr_feature
           <222> (1)...(793)
            c223 > D = A, T, C Or G
            <400× 33
gecagaacat qttqyatggt ggagcacctt tccataegac ttacaggaca gcagatqygg
                                                                                                                                        สถ
auttratggc Egitggagca alanexcocc agitclarga gc.qc:tqxtc maaggaritg
                                                                                                                                      1.20
gactesagic tgatgaactt occaatcaga tgagcatgga tgattggcca gaaatgaana
                                                                                                                                      180
agaagtitige agaigtatti geaaagaaya ogaaggeaga giggigicaa ateittqaeg
                                                                                                                                      240
gnacegatgo oligligages congettetga chibitgages gettetteat catgetcaca
                                                                                                                                      300
actions are accounted at a contract of the con
                                                                                                                                      360
changangth assacaddda godaterath chihassang ggatecacha chiatsgagd
                                                                                                                                      420
ggnogoddor geggtggage teragebitt gitocettta gigagggbea attgegeget
                                                                                                                                      480
tggcgtaatc atggtcatum etgtttcctg tgtgaaabby ttatccgctc acaattccac
                                                                                                                                      540
acazcatacy anneggasge atmasabitt adagectggn ggtngcclax tgantgaact
                                                                                                                                      600
nactoacatt settggettt gegeteactg congettled agtoeggaaa acctgtmott
                                                                                                                                      660
gecagetgee ottaatgaat enggecaddo occggggaaa aggengtitg ettottgggg
                                                                                                                                      720
egenetteed gettietege tiretgaant entieddee ggiettiegg citgeggena
                                                                                                                                      780
aeggtatena eet
                                                                                                                                      793
           <210> 34
           <211> 756
            -:212> DNA
            <213> Homo sapien
            د220ء
           <221> misc_feature
           <222> {1}...(756}
            <223> n = A,T,C or G
           <400> 34
gcogcgaccg gcatytecga gcaactcaag ggcgagtgya accgtaaaag ccccaatott
                                                                                                                                       60
anemmattee gagaanaget gagtegacte angetagtte ticlggaget exacttetig
                                                                                                                                      120
```

```
ccasccacag ggarcaaget gaccaaaceg cegsteatte tggcccgtge cetactggag
                                                                        1.80
atoggggcom aatggagoat obtacgonan gacatecocot cottogageg ctamatgged
                                                                        240
cageteaaat getaetaett tgattamaan gagetgetee regagtmage etatatgram
                                                                        300
ragetetigg geoleaacet coletteeig etgirceaga accyggigge iganinceae
                                                                        360
acggantigg aneggetger igrecaange calacanacc aaigtelace tonorcacca
                                                                        420
gtghcctgga gcaatactga tqqunggcag ctaccncaaa gtnttcctgg ccnagogtuu
                                                                        480
catebookge egagagetak acettettea tigakateet getegacaet atbagggatg
                                                                        540
assatogong ggttqctcca gamaggotne aanaanatoo ttttonotga aggcccccgg
                                                                        600
athenetagt netagaateg geoegemate geggtggane etceaacett tegtineeet
                                                                        660
ttactgaggg ttnattgccg cocttggcgt tatcatggtc achoongttn cotgtgttga
                                                                        720
antintiase cerecarnat tecaegarna cattag
                                                                        756
      <210> 35
      c211> 834
      <212> DNA
      <213> Homo sapien
      <22D>
      <221> misc_feature
      42225 (1)...(834)
      <223 n = A, T, C or G
      <400> 35
ggggatetet anatemacet gnatgeatgg tigtoggigt ggingcogic galgaanatg
                                                                        60
ascaggeint hoccortyau gototogget getgintita agtigeteag tengcogtoa
                                                                       120
tagteagaca enetetiggg caaaaaacan caggainiga girtigatti caericcaat
                                                                       1.80
astettengg getgletget eggtgaarte gatgaenang ggeagetggt tgtgtnigat
                                                                       240
agantecane angitotect togicacete cocticamag tigitorgge ettemicama
                                                                       300
ettetnnaan angannance cancettigte gagetggnat tigganwaca egicaciget
                                                                       360
ggaaactgat cocaaatggt atgtcatcca togcolotgo tgcotgcasa asacttgctt
                                                                       420
ggeneaaate egacteecen teettgakky akgeenatea eacceccete cetggactee
                                                                       480
nncaangact Otheogethe coenteening raggettegt ggcannergg gccontgege
                                                                       54 D
ttottcagec agitcacnat nitcetcage coctotgica goigtintat toottggggg
                                                                       600
ggaancegte telecettee tgaannaart tigaceging gmatagerge gentemeent
                                                                       66 D
acotheragg cogggttess antocotoon tiqueonten cotogggcom trotggatti
                                                                       720
nechaacttt tieetteece enceenegg ngittggntt titeatnggg enceaketet
                                                                       780
getnitggee antrecetgg gggenintan encoccetni ggiegening ggee
                                                                       B34
      <210> 36
      <211> 814
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(910)
      <223> t) - A,T,C or G
      <400> 36
eggnegetht congecycyc coegitteca tgachaagge tecetteang tiaaetachn
                                                                        6٥
Cotagnazar attaatgggt tgctctacta atmostrata chaaccagta ngoetgecca
                                                                       120
neacgccaac toaggccatt cotaccasag gaagaaaggo tggtototoc accocctgta
                                                                       GBE
ggamaggeet geettgtmag medecacaat neggetgmat etnamagtett gtgtttaet
                                                                       240
astggssees axeestade aanaggtitt gitttteligg uigecoarcg ragectgges
                                                                       300
ctaumacane ecagegetem ettetgette gammaatatt etttgetett teggacatem
                                                                       360
```

```
ggettgatgg talcackgod kontttoend epagetgggd noodutdood cainttigtd
                                                                        420
antganetyy awggeetgia nettagtete eaaaagtete ngeeracaag aceggeeare
                                                                        48()
aggggangte officegtg gatetgeesu anantacero tatestenot gastassag
                                                                        540
gcccctgaac ganatgette cancaneett taagacccut aateetngaa.ccatggtgee
                                                                        600
etterggtet gateenaaag gaatgttort gggtereant coctectttg tinettacgt
                                                                        660
tgtnltggad dentgetnyn atnacecaan tganatdeed ngaageacec thducetgge
                                                                        720
attigantit cotaaattot obgoodtaon ootgaaagda chatlodoth ggcocobaan
                                                                        780
ggngeactua agaaggtotn ngaasaacca cnon
                                                                        814
      <210× 37
      <211> 760
      <212> DNA
      <213> Homo gapien
      <220>
      <22)> misc_fsature
      <222> (1)...(760)
      <223> n = A, T, C \text{ or } G
      <40D> 37
geatgetget ettreteaas gttgttettg ttgrestaar sarcacesta ggtsaagegg
                                                                         60
gegragigit ngotgaaggy diigiagtar cagegoggga iquicterit geagagtoot
                                                                       120
gtgt0tgg00 ggtpcacgca atgccctttg t000tgggga aatggatgcg ctggagctcg
                                                                       180
tenaanceae teghgtatii ttoacanges gesteeteeg aagenteegg geaghtgggg
                                                                       24D
gtgtcgtcac actecactaa actgtcgatn cancagocca ttgctgcagc ggaactgggt
                                                                       300
gggotgaeag gtgccagaac acketqgatn ggcotttcca tggaaggycc tgggggaaat
                                                                       360
concernance caaactgoot etraaaggee acettgowe ecorgacagg ctagaatgo
                                                                       420
actottotto eraaaggiag tigticttyt tydroaagca nechodanda mmoemaand
                                                                       480
ttgcaasatc tgctccstys gggtcatnon taccanggtt ggygaaanaa accaggonyn
                                                                       540
ganduncett gittgaatge naaggnaata atcoreetgi eitgetiggg tyganagra
                                                                       ₽Û₽
castigaact gitaachtig gyoogngtic chotngggig giotgmazet aatcaccglo
                                                                       660
actogassas gotangtocc ticcitosat toccasanti coccinonit topycinniti
                                                                       720
etectriner etassasteg introcerce critanggeg
                                                                       760
      <210> 38
      <211> 724
      <212> DNA
      <213> Homo mapien
      <220>
      <221> misc_feature
      <222> {1}...(724)
      <223> n - A,T,C or G
      <400> 3B
tittittit tittittitt tittittit tittiaaaaa ccccctccat igaalgaaa
                                                                        60
cttccmaaat tgtccaaccc cctcmmccaa atmmccattt ccgggggggg gttccaaacc
                                                                       120
caaattaatt ttggantttm aattaaatni tnattngggg mensancras aigtnaagam
                                                                       180
mattimarce attainment teachidoin gamacconig gottocamma attitiamn
                                                                       240
cttaaatcoc toogaaattg ntmanggaaa accasatton octaaggotn tittgaaggtt
                                                                       300
ngatttaame recettmant thittimmer enngnetmas neattingnt terggigtte
                                                                      360
tocknitaan coinggiaac iccogniaat gaammooci aanccastia aaccgaatti
                                                                      420
tttttgaatt ggaaattcon neggaattma ccggggtttt tcccmtttgg gggccatnce
                                                                      48Û
cconctttou gagittaggo ntaggitage ttttinnang neccaasase necoustans
                                                                      540
aaaaaaetee raagnnttee tingaatnie reertieesa ggeettigg gaaaggnggg
                                                                      600
```

```
tttntggggg congggantt cnttececen ttnccncdec coccoenggt aaanggutat
                                                                         660
ngnmtttggt ttttgggccc clbnanggae cttccggatn gaaattaaal coccgggncg
                                                                         720
geeg
                                                                         724
      <210> 39
      <211> 751
      <212> DNA
      <2135 Gomo Rapien
      c220>
      <221> misc_feature
      <2225 (1),...(751)
      \langle 223 \rangle n = A,T,C or G
      <400> 39
thirtititi hithiciting cheacattia attitiatit igatilitit taaigetgea
                                                                         60
Caacacada titatiteat tigitieth tatticatit tattigitig cigcigotyt
                                                                        130
titatitati ittacigaan glgagaggga actitigigg ccittitics titticigta
                                                                        180
gyccycotta agotttotaa attiggaaca totaagcaag oigaanggaa sagggggtit
                                                                        240
rgcaaaatea etrgggggaa nggaaagytt qetttgttaa teatgeceta tqytgggtga
                                                                        300
beaactgott gtacaattac ntttcacttt taattaattg tgctnaange tttaattane
                                                                        360
ettgggggtt centeercan accaaccon otgacaamaa gtgrengeec (caamtnatg
                                                                        420
teceggennt entigaaaca caengengaa ngtteteatt nteccenone cagginaaaa
                                                                        480
tgaagggtta ceathittaa checaccien achiggonnn geetgaatee tenaaaanen
                                                                        54 Ú
cocteaanen aattnebnng coudgetone gentongter encouggeet vogggaantn
                                                                        600
Cauceconga annonninge nearmeabli orgaseatet teconning tesatiood
                                                                        660
ennagaetht cetenneman encestittu tittonteae gaagnegone unmaaaatgn
                                                                        72D
nnoncocció chetagicon nazionecan c
                                                                        751
      <21.0> 40
     · <211> 753
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1) ... (753)
      <223> n = A, T, C \Leftrightarrow G
      <400> 40
giggiatiti etgiaagain aggigtioni eectegiagg tilagaggaa acaeecteat
                                                                         БU
agetgaaaac ccccccgaga cagcagcort graactgcca agcagccggg gtaggagggg
                                                                        120
cgccctatgc acagetgggc cettgagada geagggette gatgtcagge tegatgtcaa
                                                                        180
lggtdtggaa geggeggetg tacctgegta ggggeacadd gteagggeec acdaggaact
                                                                        240
tetesaagtt desggessen legktgegse armeeggags desggtgatn sgettggggt
                                                                        300
dysteataan egeggtggeg tegtegetgg gagetggeag ggeeteeege aggaaggena
                                                                        360
ataaaaggtg cgccccccc ccgttcanct cgcacttctc naumaccatg angitggct
                                                                        420
charceare accambeogg anticotton nagonations anathtette ontottogge
                                                                        980
ttothotgat geoctancin gittgerenge algecaanca merceance reggggter.
                                                                        540
Baancaccon cotoctonto toatotaggs intintecco ggacontags tectotaag
                                                                        600
gyaneccata tetenaccan tacteacent necesseent gunacceane ettetannen
                                                                        660
thoconoccy necturages enteaman gettneams cotyaytoty cettreeces
                                                                        720
theretatet ghæcedenen titigtetean int
                                                                        753
```

```
c211> 341
      <212> DNA
      <213> Homo sapien
      <400> 41
uptabateea teacaaraga Catgotteat eccatagaet tottgaeata getteaaatq
                                                                         60
agigaaccca tootigatti alatacatat aigiteleag tattüiggga geetileeac
                                                                        120
ttotttaaar cttgttcatt Atyaacactg aaaateggaa tttgtgaaga gilumaaagt
                                                                        180
tategoolyb fiacgiagta agtittigak giotacatic aatooegada citagilgag
                                                                        240
tyttaaacty tyattillea aumatoteat tigagaatat tetticagag giattiticat
                                                                        300
ttttsctitt tgattaattg tgttttatat attagggtag t
                                                                        341
      <210> 42
      <211> 101
      <212> DNA
      <213> Homo sepien
      <400> 42
actiactges titagitoty tycicitoci tattiagigi iglatostam atactilgat
                                                                         60
gittommore tirtamaina etamittica giggottomi a
                                                                        101
      <210> 43
      <211> 305
      <212> DNA -
      <213> Homo sapiem
      <400> 43
acabettegt usdagtotaa gatgtgttet taaatoaeca ttechtecty gterteacee
                                                                         БU
troayaatsa teteacacta taattagage tattgaggeg tutttacage aaaltaagat
                                                                        120
tragatgert tgrtaugtet agagttelag agttatgttt ragaaagtet amgamacrem
                                                                       180
cotobigaga ggicagiasa gaggactiam tatticatat olacamaning acceptant
                                                                       24 D
tggatacaga afgagagtta teetggataa floagagotg agtacetgo: vgggggeogg
                                                                       300
tirgae
                                                                       305
      <210> 44
      <211> 852
      <212> DNA
      <213> Homo sapiem
      <220×
      <221> misc feature
      c222> (1)...(852)
      \langle 223 \rangle n = A, T, C or G
      <400> 44
acatasatat cagagaaaag tagbottiga aatattaang tooaggagtt ottightici
                                                                        60
gattattigg tgtgtgtttt ggtttgtgtc caaagtattg gcagcttcag ttttcatttt
                                                                       120
cholocator tegggoalbo trocessatt talatacoag tetregrees tecacarget
                                                                       180
cragaattic tottitgtag taatatcica tagotegget gagelittes taggicatyo
                                                                       240
typigitgit ettellitta occeataget gagedaciye etetgatite aagaacetga
                                                                       300
agacgonoto agatoggiot toccattita transcoring gitorigiot neglicanga
                                                                       360
                                                                       420
ggatgtegeg galqaattee estaagtgag tocctotegg gttgtgcttt ttggtgtgtgc
acttogoayg ggggtettg: tecttettea tateaggtga etetgeaaca ggaagytgac
                                                                       480
tggtggttgt Catqyagato tgagocoggo agaalytttt gotglocaec umalotachg
                                                                       590
tgctaccata gttggtgtca taleaatagt tetngtettt ccangtgtte atgatgmaag
                                                                       600
```

```
geteagtitg ticagnetig acastgarat tgtglqtgga etggaacagg teartactge
                                                                         66D
 actggccgll coactcaga tgctgcaegt tgctgtageg gegntgcccc gccgtccctg
                                                                         72 D
 codecedast descrettat seentestae tacsesasta credicatra statedescr
                                                                         780
 cotggasagg gatacaattg gcatccagct ggttggtgtc ckggaggtga tggagccact
                                                                         840
 CCCacacetq qt
                                                                         852
       <210> 45
       <211.5 234
       <212> DNA
       <213> House sapiem
       <400> 45
addacagace cttgeteget adogaceted tgeteateza gttggecqua tergtgtecq
                                                                          60
agtetgackt cateogrape atcageatty ettegragty ecctareges ggsametett
                                                                         120
geetegttte tygetgyggt etgetgyega aeggengant geetacegtg etgengtyeg
                                                                         180
tgaargigic golgotytet gaggaggict geaglaage( claiganceg cigt
                                                                         234
       <2105 45
       <211> 590
       <212> DNA
       <213> Homo sapien
      <220>
       <221> misc_featuro
       <222> (1)...(590)
       <223> n = \Lambda, T, C \text{ or } G
      <400> 46
actititati taaalgitta taaggeagat olatgagaat galagaazae atggigigta
                                                                         БÇ
attigetago autattitigg agettacaga gittiaglaa tiaccaatte cecagitaaa
                                                                        120
augnagataa tataticcaa gemeatacaa estatetaat gasagatemmageragaaam
                                                                        180
tgantataac taattgacaa tggaaaatca attttaatgt gaattgcaca ttatccttta
                                                                        240
adagettica aaanaaanaa tiotigeagi etantiooti eaaacagigt taaaiggiat
                                                                        300
caggataesn adutgaaggg canaeegaat taatttt.cad ttoxtgtaac ncauceanat
                                                                        36D
ttadaatgge ttaaatgdan ygaammagra gtggamgtag ggamgtante maggtottte
                                                                        420
tggtctctaa totgccttac tetttgggtg tggctttgat octotggaga cagotgccag
                                                                        480
ggotuctgit atatocadaa toocagcago aagatgaagg gatgaaaaag gacacatgot
                                                                        540
geetteettt gaggagaett cateteaetg gecaacaete agteacatgt
                                                                        590
      <210> 47
      <211> 774
      <212 > DNA
      <213> Homo sapien
      <22Q>
      <221> misc_feature
      <222> {1}...(774}
      <223> n = A,T,C or G
      c400> 47
ecanggggc ataatgeagg mgtggggana gelfttanag aaggeedamm aacgaggcco
                                                                        KU.
tgaacagest titootgnac aanggggott caaaatasiit tiotigggga ggttoaagac
                                                                       120
gottomotion tigaeectte amiggatgig ggedenamit ticigleaty accordeggy
                                                                       180
cattacagad dagaactotag gaggaadyat aaacagaaay gagacaaagg chautoccaa
                                                                       240
ascatessin assignable agretestar reconnect aranaghter congigeter
                                                                       300
```

```
cotoatocol ggwygargae agtggaggaa dawdtgwora tgtonocagg ctochgtgtg
                                                                          360
Otggetests gtettsages decagetets gaagereass stutgetgat subgestage
                                                                          42D
ceacachech tgascacaca tecceaggit atatteutgg acatggetgs acctectall
                                                                          480
detactions agaigenting electropag constrata tempartear echopaance
                                                                          540
acggeatggg eageetttet gacttgeetg ellectuug catcttggee caateeetge
                                                                          600
ttuccoacte cttagaggca agatagggtg gttaagagta gggutggace acttggagee
                                                                          660
aggetgetgg CttCamatto tggeteattt acgagctatg ggarettggg caagtnatet
                                                                          720
towettetat gggenteatt Utgttetace tgeaamatgg gggmtaataa tagt
                                                                         774
      <210> 48
      <211: 124
      <212> DNA
      <213> Homo sapien
      <22D>
      <221> misc feature
      <222> {\lambda\right\}...(124}
      \langle 223 \rangle n = A,T,C or G
      <400> 48 ·
canapattga aattilataa aaaggestii thetettata teestasaal gatataatti
                                                                          60
tigcaantai anaaatgigt cataaattai aatgiteeti aatladagot caacgoaaci
                                                                         120
tggt
                                                                         124
      <210> 49
      <2115 147
      <212> DWA
      <213> Homo supiem
      <22U>
      <221> misc_feature
      <222> (1) ... (147)
      <223> ti = A, Y, C or G
      <400> 49
geogatgeta etathttati geoggaggig ggggigtbit tattaticin teaucagett
                                                                         60
tgtggctaca ggtggtgtct gactgcatna aammnttttt targggtgat tgcaasaatt
                                                                         120
ttagggezee cataloggaa yeznigt
                                                                         147
      <210> 50
      <211> 107
      <212> DNA
      <213> Homo sapien
      <400> 50
arattaeett eetaanagga rigilggggt toigotaaaa racatoggott galatettgo
                                                                         Бΰ
Atggtttgag gttaggdqga gttaggcata tgttttgggg gaggggt
                                                                        107
      <210> 51
      <211> 204
      <212> DNA
      <213> Homo sapien
      <400> 51
gtoctagges gtotaggggs cacacgacto tggggteseg gggncyeese aettgeacgg
                                                                         60
```

```
caddagagaga agacadaga araqqacaccar cadadadaga thacadagaga dagaaqacaad
                                                                         120
 gentigeaag gloagasagg gganteaggg cilonseran agneetgene cantiggena
                                                                         180
octocctttt gggaeragea atgt
                                                                         204
       <210> 52
       <211> 491
       <212> DWA
       <213> Homo sapien
       <22 D>
       <221> misc_feature
       <222> (1]...(491)
       <223> \pi = \Lambda, T, \Gamma or G
       <400> 52
araaagataa celitetott ataaraaana lätgetagtt ttaaaggila gtattgtgte
                                                                          Бũ
gggtattttu caasagacta aagagataac teaggtaaaa agttagasat gtalaaaaca
                                                                         120
ccatcagaca ggtttttama mmacaacata ttacammatt agacaatcat oottaaaaaa
                                                                         180
seascttott gratceettt officigites assigeorge officentatt titteestatt
                                                                         24 D
teanasacae theeteasaa attileasna iggiagetti canaiginee eteagiceea
                                                                         300
atgttgctca gatamatama tetegtgaga aettacemee caecaemage tttetgggge
                                                                         36 D
atgraacigt gictiticus incittitet titititit tiacaggras agamactrat
                                                                        420
caattttatt tyystaacaa agggtotooa aattatattg aasaalaast ccaagttaat
                                                                        480
Atcuctottg t
                                                                        493
      <210> 53
      <211> 484
      <212 > DNA
      <213> Homo sapien
      <220≥
      <221> misc_feature
      <222> {1}...(484)
      <223> n = A,T,C or G
      <400> 53
acateattta geagggetaa tiaccataag atgetatita ttaanaggin taigateiga
                                                                         60
gtattaarag tigctgaagt tiggtattit tatgcagcat titcttitig cittgataec
                                                                        120
actacagane cettaaggae actgaaantt agtaagtaam gtteagaaac attagetget
                                                                        180
caatnaaato totacataac actatagtaa ttaanacgtt aassaaaagt gttgaaatot
                                                                        240
guactagini anacogotus igicaggata anacigotit ggazcagaaa gggaaazano
                                                                        300
agentigant thettigige igatangagy aaaggetgaa ttaccetigit geeneteet
                                                                        360
matgattggr aggtcnggta matnermans catatteens ctcascactt ettterneg
                                                                        420
tancutgant orgratic cagganuage eggarggaat eggucagooc neggarette
                                                                        480
cant
                                                                        4B4
      <210× 54
      <2115 151
      <212> DNA
      <213> Ното варіел
      <400> 54
actematete gigettigigk actemataca gaaaanggty cratereiga acacggetgg
                                                                         60
ccantgggta twotgetgae marrgeascs acamazacan asstruttgg cartggetss
                                                                        120
totatgtoot otcaagtgoo tittitgttig t
                                                                        151
```

```
<210> 55
      <211> 91
      <212> DNA
      <213> Homo sapien
      <400> 55
acctggettg triceggatg gitteeeggeg commeaning troomagame gganactite
                                                                         60
gccctccayt ggatactcga gccaaagtgg t
                                                                         91
      <210> 56
      <212> 133
      c212> DNA
      <2135 Homo sapion
      <400> 56
ggcggatgtg dettggttat afacakatat gtratf.tlat gtoagggact tgagtatact
                                                                         60
tegattitte gtatcheter utteggegea ceetcoagea acceetacce categatacc
                                                                        120
aagggacaac tgt
                                                                        133
      <210> 57
      <211> 147
      <212> DNA
      <213> Homo sapien
      c2205
      <221> misc feature
      <222> (1) ... (147)
      <223> n = h, T, C or C
      <400> 57
actotggaga acctgagoog otgeteegco tutgggatga gglgatgean genglggoge
                                                                        60
gactggqaqo tgagcccttc cctttgegcc tgcctcagag gattgttgcc gacntgcana
                                                                        120
teteantggg ctggatmeat geagggt
                                                                        147
      42105 58
      <211> 198
      <2125 DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(198)
      <223> n = A,T,C or G
      <400> 58
acagggatet aggittmaag ttettginet tytosaaten eligaatitt cigiatacie
                                                                        60
tgattacata catttatcct ttmaamaaga tgtaaatutt aatttttaty ccattatte
                                                                       120
atttacmest gayttacett gtaselgaya agteatgata gewetgaatt teametagit
                                                                       18D
tigacticta agittiggi
                                                                       198
      <210× 59
      <211> 330
      <212> DNA
      <213> Homo sapien
```

<4D0: 59	
acadenate gyttgtgagg aagtettate agraaaaclg ytgatggeta Ctgaaaagat	
Crattgassa ttetcattam tgatttass tgacaagtta tcassasct actcaattt	60
cacciquet agettgetaa salgagagtt aactetagag canatatagt atettetgaa	120
taragtraat asetgenas gocagggent ecaggingt tonegettt coagecoung	180
Cayaaqyaat ctattttatc acatagatct ccgtctgtgc tcaaaatacc taatgatatt	240
tttrgtcltt attggacttc tttgaagagt	300
	330
<210 5 ββ	
<211> 175	
<2125 DNA	
<213> Homo sapien	
<400> 60	
arrigingsty cottotacat tectgacygo tecttoacca acatetygit ctacttogge	60
andaragion confedent calcoboate cadetaglice footesticae ettracess	120
tertggaare ageggtgget gggeaagger gaggagtgeg attecegtge etggt	175
	(.
<210> 61	
<21.5 154 -240	
<212> DNA	
<213- Homo sapien	
<900> 61	
accomments terroring agreement actioned gotacatest gagggreage	50
ggttgttgct cttcaacagt atcctcccrt tt.coggatct gctgagcogg acagragtgc	120
tggactgcac ageoccgggg ctccacattg ctgt	154
<210> 62	
<211> 30	
<212> DNA	
<213> Homo sapien	
<400> 62	
egetegagen etatagtgag tegtattaga	
	.3 ()
<210> 63	
<211> 89	
<212> DNA	
<213> Homo Repien	
<400> 63	
acaagtoett tomgracert ttgctcttom maartgacca totttatat ttaatgette	60
ctgtatgaat aaaaatggtt atgtcaagt	89
77.0	
<210> 64	
<211> 97	
<212> DNA	
<213> Home sapien	
<9DQ> 64	
actoagtgoa cogaginggg acgotgaato igaatodaco aataaalaaa yyttoigoag aatoagigoa cogaggatig giooliggat olggggi	60
	07

```
<210> 65
      <211> 377
      <212> DNA
      <213> Homo sapien
      <220×
      <221> misc feature
      4222× (1)...(377)
      \langle 223 \rangle n = A.T.C or G
      <400> 65
acaacaanaa ntoccutott taggocantg alggamanet ggaaccccct titgatggca
                                                                        6 D
gcatggcgto ctaggccttg acecagogge tggggtttgg gctntcccaa accgcacacc
                                                                       120
ceasecring intacocada nitrigenta topocteti rigenacioa araidaggot
                                                                       180
toggicatam natgaaatee caanyyygaac mgaggteagt myaggaaget caatgagaaa
                                                                       240
sytgetytt geteageeag aaaaragetg cetogeatte gregetgaae tatgaaceeg
                                                                       300
tgggggtgaa ctarcceran gaggaateat gretgggege tquaanggtg ccaacaggag
                                                                       360
gggcgggagg agcetgt
                                                                       377
      <210> 66
      <211> 305
      <212> DNA
      <213: Homo sapien
      <400> 66
acgcctttco ctcagaatte aggg&aqaga etgtegcctg cettecterg ttgttgcgtg
                                                                        60
agazeregig igoccottou caeratated accotogote catettigam etcasacang
                                                                       120
aggrantesc typosocotyg tectetoddo agtecocagt teadcoteca tecctoscot
                                                                       180
toptocarte teagggatal caacactgre cagnacagyg genetgaatt tatgtggttt
                                                                       240
ttatetattt bitaataoga tgcacttlet gtcatttttt aalexagtct gaagaattac
                                                                       300
lgttt
                                                                       305
      <210> 67
      <211> 385
      <212> DNA
      <213> Home sapies
      <400> 67
actacaca elecatige celtgigaga eactitgice eagractite egaatgetga
                                                                        6 D
ggtcggacca gccacatote atgtgcaaga ttgcccagca gacatonggt ctgagagtto
                                                                       120
cccttttaaa aaaggggect tgcttaaaaa agaagtctag ccargattgt gtagagcagc
                                                                       160
tgEgetgEge Egyagattra rittEgagAg agticircin tgagAcotga icttLagagg
                                                                      240
Objugate tigascates gainguets statestore ageactactt estetetig
                                                                       300
retricceag georgages tggccacaco tgettacagg geactetrag atgcccatac
                                                                      360
Catagittet gigelagigg accgi
                                                                      3B5
      <210> 68
      <211> 73
      <212> DNA
      <213> Homo sapien
actioned atacetetti acceeding gogatation tighaaaaa bodaaataaa
                                                                       60
gtttttttam tgg
                                                                       73
```

```
<210 > 69
       <211> 536
       <212> DWA
       <213> Homo sapien
       <220>
       <221> misc_feature
       <222> (1)...(536)
       <223> n - A.T.C or G
       <400> 69
actagiccas igiggiggaa ticcarisis iigggggdic icacccicci ciccigcage
                                                                         60
treagettig tyctotycct rigaggagac catggereag catchyagta rectigotyct
                                                                        120
cetgotagee accetagetg tagouetage etggageee anggaggagg ataggataat
                                                                        180
congretate alocatates reservices that destanted attentions
                                                                        24 D
Cyccatcage gagtataaca aggecaccaa agatgactae tacagacgte cyctgegggt
                                                                        300
actaagagee aggeaacaga eegtrggggg ggtgaattae ttettegaeg tagaggtggg
                                                                        360
ddyxxcoata tgtaccsagt cocageccar ettggacado tgtgcctton atgaccagec
                                                                        420
agaactgcag aagaaadagt tgtgctcttt cgaggatctac gaagttccct ggggagaaca
                                                                        480
geangtoout gegigamete caggigions gammictan gestoiging coagge
                                                                        536
      <230× 70
      <211> 477
      <2125 DNA
      <213> Homo mapies
     <400× 70
atgacuecta acaggggeen totoagocet netaatgado teeggeetag contgigati
                                                                         60
teacttrese teceleaces tecteatact aggodtacts accasceds traccatats
                                                                        320
cossigatgg opogatgtas cangagaasg caratacnas ggocaccaca nandacotgt
                                                                      180
ccapaaagge ettogatace ygataateet atttattoen teagaagtit tittettege
                                                                       240
agggetitht etgageettt taccactees geetageece tacceeecaa ctaggaggge
                                                                       300
actggccccc aacaggcatc accocgctaa atcccctaga agtrccactc ctanacacat.
                                                                       360
cognattact cycorcagga gratcastos corgageros costagrera aragesasos
                                                                       $20
accgazacca eattaticsa agoactgott attacaatti tactgggtot ctattit
                                                                       477
      <210> 71
      <2105 533
      <212> DNA
      <213> Hown sapien
      <220×
      <221> misc_feature
      <222> (1)...(533)
      \langle 223 \rangle D = A,T,C or G
      <400> 71
agagetatag giacagigig ateteageti igeasacaca tittetaesi agatagiaci.
                                                                        60
aggiationi againigian ageneganai cacaccatte aimaiggian geliggiita
                                                                       120
tgtgatttta gtggtatttt tggcaccett alatatgttt tecaaacttt cageagtgat
                                                                       180
ettatttccz taacttaaas agtyagtttg asaaagaaaa totocagcaa gontotcatt
                                                                       240
tasataaagg titigtcatet tisaaaatec agcaataigt geetittiaa saaagcigte
                                                                       300
abatuggigt gaccotacia ataattatta gaaalacatt taasaacato gagtacoica
                                                                       360
agtragttly cottgaadaa tatraaalat aactritaga gaaatgtaca taasagaatg
                                                                       42D
ottogtaatt tiggagtang aggitecete etesatitig taltitiesa amgiacatgg
                                                                       480
tasaaaaaaa eettoxoxxo agtatataeg gotgtasaat geegwattot goo
                                                                       533
```

```
c2105 72
      <211> 511
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(521)
      <223> n = A,T,C or C
      44DU> 72
taltacegam magracarca rataattoma claucamaga anactector agegreteta
                                                                         60
membasagg ctt.ccaggca gttatetgat taaagaacac taaaagaggg acaaggetaa
                                                                        120
eaguugueya atgtotacao tatancaggo gotatttggg ttggchggey yagotgtgge
                                                                        180
aaacatggan agahtggtgd ligganatogo ogtggotati detembegt attadanagt
                                                                        240
gaggttotot gtgtgcccoc tggtttgaam accettotne aataat.gatm gamtagtacm
                                                                        3 D O
cacatgagaa rigaaatggg CCAxxoccog aaagsaagco Caxotxgair cicagaxnar
                                                                        360
gcttctaggg accutacog atgaagaaaa galgggotoc ttgtgccccc gtctgttatg
                                                                        420
ntttototoo attgoagona naaaccccytt ottotaagoa eachcaggtg atgatggona
                                                                        48D
azatacaeco outottyway naernggagg a
                                                                        511
      <210> 73
      <211> 499
      <212> DRA
      <213> Homo sapien
      <220×
      <221> misc feature
      <222> {l}...[499]
      <223> \pi = A,T,C or G
      <400> 73
cagtgerage actggtgcca gtmccagtae caatmacagt gccagtgeca gtgccagcac
                                                                        60
cagliggibgs: treagigeig gigecageel gaedgoeact cicarathig ggelettege
                                                                       120
tygeettygt ggagetggtg ceagoaceag tygeagelet ggtgeetgtg gttleteeta
                                                                       180
caagtgagat tttagatatt gittaatooty obaytottto tottoaagoo agggtgoato
                                                                       240
cteagaaacc tactcaadac ageactetag geagreacta teaatcaatt gaagttyaca
                                                                       300
ctotigoatta aatotattig coattioiga aaaaaaaaaa aaaaaaaaggg oggoogotog
                                                                       360
antetagagg gcccgtttaa accegetgat ragcctcgac tgtgccttct anttgccaqe
                                                                       920
catchging ingecented congrigod techniques iggaaagige contessat
                                                                       480
gteettteet aantaaaat
                                                                       499
      <210> 74
      <211> 537
      <2)2> DNA
      <213> Home sapical
      c220>
      <:221> misc_feature
      <222> (1)...(537)
      <223 n = A,T,C or G
      -40U2 74
thicalagya gaacacactg aggagatact tyangaatti ggattcagcc gcyangagat.
                                                                        60
```

```
ttatcagcti sactuagata aaatcattga sagtaatmag gtaaasgcta gtototaact
                                                                        130
 tecagaccoa eggeteaagh gaatttgamt actgeathta cagtgtagag taacacatam
                                                                        180
 ratigiango aiggaandat ggaggaacag talladagig icciaccact diaaicaaga
                                                                        240
 aaagaattac agactetgat tollacagtga tgattgaatt claaaaatgg taatcattag
                                                                        300
ggettttgat tieteanaut tigggtactt atectament atggtagtte twotgrette
                                                                        360
 Cagttigott gatatatitg tigalatima gatteriges thatatitig aalgygiter
                                                                        420
artgaasaan gaatgatata ttettgaaga cotegatata catttattle Coetettgat
                                                                        480
tutacaatgt agaaaatgaa ggaaatgcoc caaattgtat ggtgataaaa gtocogt
                                                                        537
       <210> 75
       <211> 467
       <212> DNA
       <213> Homo sapien
      <220×
      <221> misc feature
      <222» (1)...(467)
      <223 n = A.T.C or G
      <400> 75
capanacaat tgitcasasg sigosaatga tacscladig cigragcica dasacaccic
                                                                        60
tgcatettac acquacotco toctgotoct caagtagtgt ggtchatttt gccatcatca
                                                                       120
cotactatet gettagaaga acgaetttet getgeaanga agagaaatea taacagaegg
                                                                       180
tggcaraagg aggcoatott ttretcateg gttattgtcc ctagaagogt ettetgagge
                                                                       240
totagttagg cittetitet gggittagge cattteanil otoatgigig tactatteta
                                                                       300
teattattgt ataseggttt temmseengt gggdaenemg agmmetese tetgtamtam
                                                                       360
cantigageas tagecarggt gatetocage accasatete becatetint teragageto
                                                                       42U
ctoragersa cocasatago opergetato giglagados teceigo
                                                                       467
      <210> 76
      <211.> 400
      <212> DNA
      <213> Homo Bapien
      <220:
      <221> misc_feature
      <222> (1)...(400)
      <223> n = A,T,C or 0
      <400> 76
aagnigedag dattoggger gagatgicto gotoogigge chiagobyty chegegotac
                                                                       60
tetetette tggeetggag getatecage gtactecaaa gatteaggif tacteaegte
                                                                      120
atroageaga guatggaaag teaaattiee tgaattgeta tgigtotggg titeatceat
                                                                      180
cegacatiga agtigactia cigaagaatg gagagagaat igaaaaagig gagcaticag
                                                                      240
actitytettt cagcaaggae tegiettiet atetetigte etacaetgaa iteaecceum
                                                                      300
ctgasaaaga tgagtatgoc tgccgtgtga accatgtgac tttgtcacag cccaagatng
                                                                      360
ttmagtggga teganacatg taaycagean catgggaggt
                                                                      400
      <210× 77
      <211> 248
      <2125 DNA
      <213> Homo sapies
      <400> 77
rtggagtgrd tiggtgttto.augecertgd aggmageaga atgcaddid tqaggeact
                                                                       60
```

```
coagetgeee eggeggggga f.gegaggete ggageaeert tgeeeggetg tgattgetge
                                                                        120
caggeactgt healdteagt tittetgier chiigefood ggeaageget telgetgaaa
                                                                        180
utteatatet ggagerigat gretteacqu atmanggiee enigeleeme ecgaamamam
                                                                        24 U
BESEBBE
                                                                        24B
      <210: 7B
      <211> 201
      <212> DNA
      <213> Homo sapien
      <400> 78
actagiccag hgkagigaa ticcatigig higggaddaa cacaaiggat accittaaca
                                                                        60
tokeccagae coegreetse cogtgecoux egetgetget aacgacagta teatgettae
                                                                       120
tetgetacte ggaaadlatt titatgtaat taatgtatge titettgitt ataatgeet
                                                                       180
gatttaaxxx zzzzzzzzzzz z
                                                                       201
     <210> 79
      <211> 552
      <212> DNA
      <213> Nomo sapien
      <.220>
      <221> misc_feature
      <222> {1}...(552}
      <223> n - A,T,C or G
      <40U> 79
tectitibit aggittitga gacaaceete gacetaazet giginacaga ettetgaatg
                                                                        60
tttaggeagt getagtaatb teetegtaat gattetgtta ttacttteet atDetteatt
                                                                       120
cctctttctt ctgaagatta atgaagttge saattgaggt ggataastec maaaaggtag
                                                                       180
tgtgatagta taagtatote agtgdagatg maagtgtgtt atatatatoc antosaaatt
                                                                       240
atgraagita gtaattacte agggttaact aaabkacttt aatatgetgt tgazeetaet
                                                                       300
Ctgttccttg gctagaaaaa attataaaca ggactttgtt agtttgggaa gccaeattga
                                                                       3&0
taatattela tgitetaman giigggetat acatakania inaagaaata iggaatiita
                                                                       420
ttoccaggaa tatggggtto Attlatquat antacceggg enaquagttt tgantnadac
                                                                       48D
engittiggt taataegtta atatgteetn aatnaacaag gentgaetta titeeaaaaa
                                                                       540
ಎಎ ಒಂದಿ ಬರುಗಳು
                                                                       552
      <210> 80
      <211> 476
      <212> DNA
      <21.3> Humo sapien
      <220>
      <221> misc_feature
      <222> (1)...(476)
      <223> n - A,T,C or G
      <400> BO
meagggattt gagatqotan ggccccagag mtcgtttqat ccaaccetct tittttccaga
                                                                        60
ggggaaaatg gggcctagaa gttaCagayo atctagctgg bydgotggca cccctggcot
                                                                       120
cacacagant cooyagtage tyggactaca ggcadadagt cactgaagda ygocctgttt
                                                                       180
genationes tiscemente cancitanne attettenta terrateire trastenera
                                                                       240
aggitasant titoccoccco gaoaaggcaa nitaquiana alcitagagy actitestac
                                                                       300
tolletwagt celetteesg colleantity agreeteeth gygggtigat aggaaninte
                                                                       360
```

```
tottggottt. Ctommtamma tototatoca totomtgttt matttggtad gomtammat.
                                                                                                                                                                  420
   getganaana ttaasatgtt elgytttene tttasaassa saasas
                                                                                                                                                                  476
                 <210> 81
                 <2115 232
                 <212> DNA
                 <2135 Home sapism
                 <22D>
                 <221> misc_feature
                 <222> (I)...[232]
                 \langle 223 \rangle n = A,T,E or G
                <400> 81
  tittittitg talgeenten eigiggngit allgitgetg eraceetgga ggagecragt
                                                                                                                                                                   60
  ttettetyta tetttetttt etgggggate tteetggete tgeeeetera tteecageet
                                                                                                                                                                 120
  ctratrecea teltgeautt tigetagggt tggaqgeget tiretggtag eccetcagag
                                                                                                                                                                 180
  actuagroup ogggestaag toolkbyygt ggggggtgtg gckageogge et
                                                                                                                                                                 232
                <210> 82
                <2112 383
                c2125 DNA
                <213> Homo sapien
                <220>
                <221> misc_feature
                <222× (1)...(383)
                <223> n = A,T,C or G
                <400> B2
  aggogggago agamgetama gecaamgooo mayamgagtg geagtgoomg caetggtgoo
                                                                                                                                                                  60
. agtaccagta ccastascat godagtgcca gtgccagcac dagtggtggr thoagtgctg
                                                                                                                                                                120
  gigecageet gaudgeezet etcacaittg ggutettege iggeettegi ggzgeiggig
                                                                                                                                                               180
  Congoaccag iggragatet geigeetgig gitteteeta caagigagai ittagatati
                                                                                                                                                               240
  gttmatentg coagtotte tetteamgon agggtgemte etcagamaco twetcamen
                                                                                                                                                               300
  aguactoing geagemants teastemant geagitgace cicigeotte astetating
                                                                                                                                                               360
  CCatttenaa aaaaaaaaaa aaa
                                                                                                                                                               3B3
               <210> 83
               <211> 494
               <212> DNA
               <213> Homo sapien
               <220>
               <221> misc_feature
               <2225 (1)...(494)
               <223> \pi = A,T,C or G
               <400> 83
 accepanting garrectings that anyons transfers that the transfers and the second second
                                                                                                                                                                 60
 gggagatega gtotataego tgaagaaatt tqaooogatg ggacaacaga ootgeteago
                                                                                                                                                              120
 ecatoetget eggiteiene cagatgacaa atactetega excegaatea ceateaagaa
                                                                                                                                                              180
 acgetteasg glyctostgs eccageased gegoeetgte etetgagggt cettasactg
                                                                                                                                                              24 U
 atgrottite tgeracetgt taccoctogg agarteegta accossettt teggactytg
                                                                                                                                                              300
 agreetgatg collittgee agreatacte tiliggentee agtetetegt ggegottgat
                                                                                                                                                              360
```

```
talgolligig tyapgozate atggtggcal caccoatnaa gggaacacat tiqantitit
                                                                        420
tttoncatat tttaaattac necceyamta nttragaate eetgeettga aasactotte
                                                                        480
KB80 5006888666
                                                                        494
      <210> 84
      <211> 380
      <212> DNA
      <213> Homo sapien
      <220≥
      <221> misc_foature
      <222> {1}...(380)
      <223> n = A,T,C or G
      <400> 84
gotggtaged tatggegtig deadggamgg geteetgagg dacgggadag tgactudoca
                                                                         бD
agtatected googdetett etacegtedd tacctgoaga tottoggoga wattercoag
                                                                        120
gaggacatgg acgiggeest caiggageac ageaactget egicggages egictleigg
                                                                        180
geacacente ctggggcock ggogggeare tgcgtcteec agtatgecaa ctggetggtg
                                                                        240
gtgotgotoc togteateth cotgotogtg gooaacatoo tgotggtoac tigetcattg
                                                                        300
cratgitcag itanacattu agumaagiac agggcaacag chaicidtan taggaaggee
                                                                        360
agogutness coteateegg
                                                                        3B0
      <210> 85
      <211> 481
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(481)
      4223 \times D \simeq A, T, C or G
      <400> 85
gagttagdUC Otocacaacc ttgatgaggt ogtotgeagt ggcctotogo ttoztacego
                                                                        60
thocategic atachgragg thugocacca entertycat citiggggrag chaetatoca
                                                                       120
ggaaactoto aatcaagtea cogtonatna aacctgtgge tggttotgto ttoogetogg
                                                                       180
tgtgaaagga tetecageag gagtgetega tettecedar mettttgatg actttattga
                                                                       240
gtogettotg caratocage aggaggtigt accupatete tgacegtgey gtoaccagee
                                                                       300
etateatger nttgaacgtg @cgaagaaca cegagectty tgtggggggt gnagteteac
                                                                       360
ccagattotq cattaccaga magccgtggc addagamatt gacaectogc ccaggnogaa
                                                                       420
ausgaucaer testggaagt getnyceget cetegteent tggtggnnge gentneettt
                                                                       480
ţ.
                                                                       481
      <210> 86
      <213> 472
      <212> DNA
      <213> Homo sapien
      <220>
      <221> migo_feature
      <222> (1).,,{472)
      <223> n ~ A,T,C or G
      <400> 86
```

```
ascatettee tytataatgo tytytaatat egateeyatu ttytotyety agaattoatt
                                                                         60
autiggmana genactinaa geekggadau tyytattaaa atteacaala tymaacaett
                                                                        12Ú
tamacagigt ghomalobge tecettacti igicalcace agiotoggma tamaggizig
                                                                        180
cuctatteau accigitama agggogolaa goattiitga ticaacatou tittiitiga
                                                                        340
cacaagteeg aaakaagead mogtmoacag tinttaatti gitageemat teacittett
                                                                        300
categgacay agreatitga titaasaago aaattgoata atattgagol tigggagotg
                                                                        360
atainigage ggeegantey coittetari iraccagere caectectii rateiiggga
                                                                        420
tgttmacnaa agitaigici citaragaty qqaiqotiti giggcaatto ig
                                                                        472
      <210> 87
      <211> 413
      <212> DNA
      <2135 Homo sapien
      <220×
      <221> misc_feature
      <222> (1)...(413)
      <223> n = A, T, C \text{ or } G
      <400> B7
agamaccage atticinasa ecaacctore atacettgig gandtaatti igigigogtg
                                                                        ÐΩ
tgtgtgtgcg cgcatattat atagacaggc acatottttt tacttttgta akagettatg
                                                                        120
cototttggt atotatatot gtgassgttt taatgatotg costastgto ttggggscot
                                                                       180
tigicitcing totakatygi actagagasa acancheunt tatgagicaa totayiingi
                                                                       24 D
thtattegad atgaaggaas ittedegath adamoactna caaactetoo citgactagg
                                                                       300
ggggacaaag aaaagcanaa otgaacatna gaaacaattn ootggtgaga aattnoataa
                                                                       360
acegaeetty gytnytatat tysaananny calcattnas acyttititi tit
                                                                       413
      <210> 88
      <211> 448
      <212> DNA
      <213> Homo sapien
      <220>
      <221> mlsc_fcature
      <222> (1)...(448)
      <223> \eta = A,T,C or G
      <0DO> 88
cacadeage cereterate tageterage ereregeers coccactere egestroose
                                                                        60
gteetageen accatiggeeg ggeeerigeg egeecegetg eterigetgg ceateetgge
                                                                       120
catadocetà accaramace ecacáaceà ercesarce ademinacea edeacetabl
                                                                       180
gggaggccca tgyacceege gtggaagaag aaggtgtgeg gegtgeactg gactttgeeg
                                                                       240
teggenanta caacaaacco quaacnactt ttaccnagen cgcqctycag gttgtgccyc
                                                                       300
crossactad tightacing gagiaanise tightagaag tigaaccigg gucasacang
                                                                       360
tttaccagaa conagodaat ingaacaatt neerotodab aadageeret titaaaaagg
                                                                       420
9880cantce tgntcttttc cesatttt
                                                                       94B
      <210> 89
      <211> 463
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
```

```
c2225 (1)...(463)
      <223> ti = A,T,C or G
      <400> 89
gaattitgig caciggccac tgtgutggza ccatigggcc aggatgctit gagtttaica
                                                                        6D
ghaghgathC tgucamagtt ggigtighaa cabgagtaig tammatgica ammantage
                                                                        120
agaggtetag gtetgeatat Cageagacag titgtengig taltitgtag centgaagtt
                                                                        180
ChCagtgaCA agtiunited gatgegragt bCloatteea gighttbagt cettigeate
                                                                        240
tttnatgtin agacitgcot Cininamatt gelittigint telgeaggia etalejigigg
                                                                        300
tttaacaaaa tagaannact tetetgetto gaanatttga atatettaca tetnasaatn
                                                                        360
zattetetee eeatammaaa aeeexmgeee ttgggamaat ttgaaaaang gnteettenn
                                                                       420
aattonnana auttoagnin toalacaaca naaunggane eec
                                                                        463
      c210: 90
      4211> 4DD
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(400)
      <223> n = A,T,C or G
      -40U> 90
agggattgaa ggtetntini aetgieggae igitoaneea eeaactetad aagitgeigt
                                                                        60
ottocartea etgicigiaa gontritaae ceagactgba tettrataaa tagaacaaat
                                                                       120
tottoaccag Coacatotte taggacettt tiggatteng tragtataan obetteeact
                                                                       180
teettigtta agastisats tiggidaagis tiaagiittig tagaaaggaa titaattigst
                                                                       240
egitetetaa caalgiooto toottgaagi attiggoiga acaacceaec thamgicect
                                                                       300
ttytgoatoo attitaaata tacttaatay ggoattygin cactaggita aattotygaa
                                                                      36 D
gagicatrig hotgosasse tigogitagi atatolgoda
                                                                       400
      c210> 91
      <211> 480
      <212> DNA
      <213 > Homo sapiem
      <220>
      <221> misc_Feature
      <222> (1)...(480)
      <223> n = A, T, C or G
      <4DD> 91
gagotoggat ccaataatot tigicigagg geageacaca tabneagige catggmaact
                                                                        60
ggtctacccc acateggage ageatgccgt agniatataa ggtcattccc tgagtcagac
                                                                       120
atgestettt gastadogtg tgdbagtgst ggtgattstd acaraertes nnccgetett
                                                                       180
tglggalaaa otggcacttg notggaacta goaagarato actlacaaat tcacccacga
                                                                       240
garactigaa eggbytaaca aagegaetet tgcaltyott tttgtccctc cggeweeagt
                                                                       300
tytoaatact aaccegetyg tilgeeleem teacatttyl yaletytage tetygatacu
                                                                       360
tctcctgeca gracigaaga actictictt ttgitticaaa agcaactcii qqiqcciqti
                                                                       420
ngatcaggit recattions agreegaatg ticacatege ataintiact teccaragaa
                                                                       980
      c210> 92
      c211> 477
      <212> DNA
```

```
<2135 Home gapien
       <220>
       <221> misc_feature
       <222> (1).,,(477)
       <223> n = A,T,C or G
       <400> 92
atauagecca natcccacca egaagatgrg cttgttgzct gagaacctga tgcggtcmet
                                                                         60
ggteccgetg tagecccage gactetecae etgetggaag eggttgatge tgeacteett
                                                                        120
codredered cadeacada accederes deecroser cardacetes agressora
                                                                        IAD
taantgongg kayaggetga cencetegog gtecarcagg atgeergart gtgegggaer
                                                                        240
theagegaza etectrhaty steatgaged ggaagegaat gangecoags geettheesa
                                                                        300
gaacettoog detgitetet ggogidadet gengetgolg bogetnacad toggeetogg
                                                                        360
accagoggar asacggogtt gascagorge acctdaogga tgoccantgt gingcgotec
                                                                        420
aggaarggen coagegtgte raggteaatg toggtgaane etergegggt aatggeg
                                                                        477
       <210> 93
       <211> 377
       <212> DNA
       <213> Romo sapien
      <220×
      <221> misc_feature
      <222> (1)...(377)
      <223> \pi = A,T,C \Leftrightarrow C
      <400> 93
gazoggetgg accitgoete geattgoget yetggeagga elacettgge aagcegetee
                                                                         60
agt.ccgagea greeragace getpeoger gaagetaage ergertetge cetterecte
                                                                        120
egecteaatg ragaaccant agtgggagce etgtgtttag agttaagagt gaacactgtn
                                                                        180
tgattttect tgggaattte ctctgttata tagettttcc caatgetast ttccaaacaa
                                                                       240
Chacaacaaa ataacatytt tyeetyttna ottytataaa agtengtyat tetytatmta
                                                                       300
aagaaaatal tectgitaca tatactypit gcaanttoty tatitatigg inciciggaa
                                                                      · 36 D
ataastat tattaaa
                                                                       377
      <210> 94
      <2135 495
      <212> DNA
      <213> Homo eapien
      <220>
      <221> misc_feature
      <222> (1)., (495)
      <223> n = A,T,C or G
      <400> 94
contitgagg ggbtægggte cagttrocces tggaagaaac eggunaggag santgiggeg
                                                                        60
cgegotgang cagatttocc acagtgacon cegagocotg ggntabagto totgaccout
                                                                       120
ccaaggaaag accaccttet ggggacatgg getggagggc aggacctaga ggcaccaagg
                                                                       180
gaayyeecca tteegggget gtteeergag gaygaaggga agggyetetg tgtgeeece
                                                                       24 D
acgaggeene ggccctgant cotoggatca nacaccoott cacgtghato occacaceee
                                                                       300
tguaagetca ccaaggtooc eteteagted ettecetaca ecctgaargg neactggee
                                                                       360
acarccacco agameancea coogdoatgg ggaatgloot caaggaatog ungggeaacg
                                                                       420
tiggaetetng tecennaagy gggeagaate teeaxtagan gganogaace ettgetoana
                                                                       480
```

```
абьба впиванава
                                                                         495
       <210> 95
       <211> 472
       <212> DNA
       <213> Homo sapien
       <220>
       <221> misc_feature
       <222> {\\}...(472)
       <223> \pi = A.T.C or G
       <400> 95
ggttartigg tit.cattgoc accaettagt ggatgtcatt tagazccatt tigtotgetc
                                                                         60
cototggaag cottgcgcag egoggacttt gtaattuttg gagaataact gotgaatitt
                                                                        120
tagetgtttt gagttgatte geaeractor accoesacte aatatgsaaa etattmart
                                                                        180
tatttattat ottgigaasa gidiacaotg aaasttiigt icalacigia iitaicaagi
                                                                        240
atgatgoasa gcestegate tatettotilt tattetgttn aettatgatt gccettatta
                                                                        300
ateggeassa tgtggagtgt atgituttit caesglaatz tatgeettit gizaettese
                                                                        36D
ttygttattt tattgtaaat gaattacaaa attottaatt (aagaaaatg gtangttata
                                                                        420
tttanttcan bacttictt cottigttime gitaatiitty amaagaatgu at
                                                                        472
      <210> 96
      <211> 476
      <212> DNA
      <2135 Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(476)
      <223> n = A,T,C or G
      <400> 96
otgaageath tottomamet intohectit tgicaliget accigiagia agtigaceat
                                                                        60
ghgglgaaat tirsaaatta tätgtaarit charlagiit tacttirtoo coraagioli
                                                                       120
ttttaactca tgatttttac acacacaatc cagaacttal tatatagect ctaagtettt
                                                                       180
attriteaca gragargatg aamgagreet compretet gngcanaatg tretagneat
                                                                       240
agriggated stadingiggs agricustat actuatacet caginggact neaccasest
                                                                       300
Eghgitagic teaathoota compactgag ggagootece masteactmi attettatet
                                                                       360
gcaggtarte etoesgaaaa aengacaggg caggettgea tgaaaaagtn acatotgegt
                                                                       420
tecasageet atetteetes namgtetgin eaggamezat tiasuettet agetti.
                                                                       47G
      <210> 97
      <211> 479
      <212 > D00A
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> {)]...[479]
      <223> n = A,T,C or O
      <400> 97
actrittria etgetgatot gatettgagt staagaatge stotgicact agestggsta
                                                                       60
asataatgot goasachtaa tettottatg desamtggaa ogdosatgam acacagotta
                                                                      120
```

```
caategeaaa teaaaactea eaagtyotea tetgttgtag attagtgta ataagaetta
                                                                       180
galitytycle citoggatat gattyttint canatoring graatnilee tragtraaat.
                                                                       240
caggetacta geattetgtt ettggstotn tgagagestg seatttttaa naatscaett
                                                                       300
gtgettetne sattaatdad ammitteest telecutget etragoegol agammaacat
                                                                       360
ntnnttttta natcaaagta tiitigigitt ggaantginn aaatgazate tgaatgiggg
                                                                       420
ttenatella littitecon garnaciani incittitta gggnetatic tganecate
                                                                       479
      <210> 98
      <211> 461
      <2)2> DNA
      <213> Homo sapien
      <400> 98
agigacitgi cotocaacaa aaccontiga toaagitigi ggracigaca atcagancia
                                                                        60
tgotagtice igteatetat tegetaetaa algeagaetg gaggggacea aaaaggggca
                                                                       120
traactrosg clagattatt tiggageetg caestotatt cetactigia uggaettiga
                                                                       180
agtgattdag titcetetar ggatgagaga etggeteaag aatmicetea igcagetitm
                                                                       240
tgaagccact ctysacacyc tggttatcta gatgayaxca gagaaateaa gtcagaaaat
                                                                       300
ttacctggag aadagagget tiggelgggg accatereat tgaacettet etiaaggaet
                                                                       360
ttaagaaaaa ctaccacatg tigigiatee iggigoogge egittaigaa oigarracer
                                                                       420
tttggaataa tettgarget eetgaacttg etectetgeg a
                                                                       961
      c210> 99
      <211> 171
      <212> DNA
      <213> Homo sapien
      <400> 99
gtggregege geagglotit vetegtaceg cagggeneve teerttreec aggesterri
                                                                        60
caacaceter abadaceda dasadasacaa erabodaara adadasatat ascecseeee
                                                                      120
eggigagaaa agcchtotob agegatoiga gaggogbgco tigggggtac c
                                                                      171
      <210> 100
      <211> 269
      <212> DNA
      <213> Homo sapien
      <400> 100
oggoogeaag tgeaactoca gotggggeeg tgeggacgaa gattetgeea gnagttggto
                                                                       60
cdactdcdgc Agedgedded gedgeadfed cydyfdeade dedddcdccf adddfetfdc
                                                                      120
maggetgage tgaegeegea gaggtegtgt eaegteeeae gaeettgaeg eegteggga
                                                                      180
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agigggiges coetectigt agazeetigt lackangett ggggeagite meetigtetg
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tgaccgreat titetigace tcestgitut tagaagteeg gututettit agagagteem
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                                                                      19 Đ
atatactict ticagrassc tigttacata satissassa alatatacgg ciggigitit
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cograzaggt taaagggesc securation titareacec cettatarea atceteto
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325
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<400> 112

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195 200 His Phe Arg Val Tyr Leu Ser Lys Glu Ala Glu Arg Lys Lou Leu Thr 215 Trp 510 Ser Val His Lys Glu Asn Phe Leu Leu Ala Ang Ala Arg Asp 230 235 Lys Arg Glu Ser Asp Ser Glu Arg Leu Lys Arg Thr Ser Gln Lys Val 250 ARD Let Ala ben Lys Gln Let Gly His Ile Arg Glo Tyr Glo Gln Arg 26D 265 Leu Mys Val Leu Glu Arg Glu Val Gln Gln Lys Ser Arg Val Leu Gly 275 280 285 Trp Val Ala Glu Ala Leu Ser Arg Ser Ala Leu Leu Pro Pro Gly Gly 295 Pro Pro Pro Pro Asp Leu Pro Gly Ser Lys Asp 310

<210> 113 <211> 553 <212> PRT <213> Homo sapien

<400> 113

Met Val Glo Arg Leu Trp Val Ser Arg Leu Leu Arg His Arg Lys Ala 10 Gin Len Len Leu Val Asn Len Len Thr Phs Gly Len Glu Val Cys Len 20 25 Ala Ala Gly Ile Thr Tyr Val Pro Pro Leu Leu Glu Val Gly Val 40 Glu Glu Lys Phe Met Thr Met Val Len Gly Ile Gly Pro Val Lou Gly 55 Leu Val Cys Val Pro Leu Gly Ser Ala Scr Asp His Trp Ary Gly 70 75 Arg Tyr Gly Arg Arg Pro Phe Ile Trp Ala Leu Ser Leu Gly Ile 85 90 Leu Leu Ser Leu Phe Leu Ilc Pro Arg Ala Gly Trp Leu Ala Gly Leu 105 ben Cys Pro Asp Pro Arg Pro Leu Glu Leu Ala Leu Leu Ile Lieu Gly 120 Val Gly Leu Leu Asp Phe Cys Gly Gln Val Cys Phe Thr Pro Leu Glu 3.35 140 Ala Leu Leu Ser Asp Leu Phe Arg Asp Pro Asp His Cys Arg Glm Ala 150 155 Tyr Ser Val Tyr Ala Phe Met Ile Ser Leu Oly Cly Cys Leu Oly Tyr 165 17D 175 Leu Leu Pro Ala Ile Asp Trp Asp Thr Ser Ala Leu Ala Pro Tyr Leu 185 Gly Thr G)n Glu Glu Cys Len Phe Gly Leu Leu Thr Leu Ile Phe Leu 3 Q D Thr Cys Val Ala Ala Thr Leu Lou Val Ala Glu Glu Ala Ala Leu Gly 215 Pro Thr Glu Pro Ala Glu Gly Leu Ser Ala Pro Ser Leu Ser Pro His 230 235 Cys Cys Pro Cys Arg Ala Arg Leu Ala Phe Arg Asn Leu Gly Ala Leu 245 250 Leu Pru Arg Leu His Glin beu Cys Cys Arg Met Pro Arg Thr Leu Arg

260 265 Arg Leo Phe Val Ala Glu Leo Cys Sor Trp Met. Ala Leo Met Thr Phe 280 285 Thr Leu Phe Tyr Thr Asp Phe Val Gly Glu Gly Leu Tyr Gln Gly Val 295 Pro Arg Ale Glu Pro Gly Thr Glu Ale Arg Arg Ris Tyr Asp Glu Gly 310 315 Val Arg Met Gly Ser Leu Gly heu Pho Leu Gln Cys Ala Ile Ser Leu 325 330 Val Phe Ser Leu Val Met Amp Arg Leu Val Glm Arg Phe Gly Thr Arg 340 345 Ala Val Tyr Leu Ala Ser Val Ala Ala Phe Pro Val Ala Ala Gly Ala 360 Thr Cys Leu Ser His Ser Val Ala Val Val Thr Ala Ser Ala Ala Leu 375 380 Thr Gly Phe Thr Phe Ser Ala Leu Glm Ile Leu Pro Tyr Thr Leu Ala 390 395 Ser Leu Tyr His Arg Glu Lys Gin Val Phe Leu Pro Lys Tyr Arg Cly 405 410 Asp Thr Gly Gly Ale Ser Ser Glo Asp Ser Leo Met Thr Ser Phe Lou 425 Pro Gly Pro Lys Pro Gly Ala Pro Phe Pro Asn Gly His Val Gly Ala 435 440 Gly Cly Ser Gly Lew Lew Pro Pro Pro Pro Ala Lew Cys Gly Ala Ser 455 460 Ale Cys Asp Val Ser Val Arg Val Val Val Oly Glu Pro The Glu Ala 470 475 Arg Val Vai Pro Cly Arg Gly Ile Cys Len Asp Leo Ala Ile Lou Asp 485 490 Ser Als Phe Leu Leu Ser Gin Val Ala Pro Ser Lou Phe Met. Gly Ser 500 505 Ile Val Gin Leu Ser Glm Ser Val Thr Ala Tyr Met Val Ser Ala Ala 520 525 Gly Less Gly Less Val Ala Ile Tyr The Ala Thr Glm Val Val Phe Asp 535 54 U Lys Ser Asp Leu Ala Lys Tyr Ser Ala 545 550

<210> 114

<211> 241

<212> PRT

<213> Homo sapien

<400> 114

 Met
 Glo Cys
 Pic Ser
 Phe
 Lie Lys
 Thr Met
 Met
 Lie Leu
 Phe
 Agn
 Leu

 Leu
 Ile
 Phe
 Lcu
 Cys
 Gly
 Ala
 Ala
 Leu
 Leu
 Ala
 Val
 Gly
 Ile
 Trp
 Val

 Ser
 Ile
 Asp
 Gly
 Ala
 Ser
 Phe
 Leu
 Lys
 Ile
 Phe
 Gly
 Pro
 Leu
 Scr
 Ser

 Ser
 Ala
 Met
 Gly
 Ala
 Ser
 Phe
 Leu
 Lys
 Ile
 Phe
 Ile
 Ala
 Ile
 Scr
 Ser
 Ser

 Ser
 Ala
 Met
 Gly
 Ala
 Ser
 Phe
 Leu
 Lyr
 Phe
 Leu
 Ile
 Ala
 Ala
 Gly
 Fra
 Ser
 Phe
 Leu
 Gly
 Tyr
 Phe
 Leu
 Ile
 Ala
 Lys
 Thr
 Phe
 Leu
 Gly
 Cys
 Tyr

282

```
В5
                                     90
Phe Ile Ala Glu Val Ala Ala Ala Val Val Ala Leu Val Tyr Thr
                                 205
Met Ala Giv His Phe Leu Thr Leu Leu Val Val Pro Ala Ile Lys Lys
                             120
                                                 125
Asp Tyr Gly Ser Glu Glu Asp Phe Thr. Glo Val Trp Asn Thr Thr Met
                        135
                                             140
Lys Gly Leo Lys Cys Cys Gly Phe 1hr Asn Tyr Thr Asp Phe Glu Asp
                    150
                                         155
Ser Pro Tyr Phe Lys Glu Asn Ser Ala Phe Pro Pro Phe Cys Cys Asn
                165
                                     170
                                                         175
Asp Asn Vel The Asu The Ala Asn Glu The Cys The Lys Gln Lys Ala
                                 185
                                                     190
His Asp Gln Lys Val Glu Gly Cys Phe Asn Gin Leu Leu Tyr Asp Ile
        195
                             200
                                                 205
Arg Thr Ash Ale Val Thr Val Gly Gly Val Ale Ale Gly The Gly Gly
                        215
Leu Glu Leu Ala Ais Met Ilo Val Ser Met Tyr Leu Tyr Cys Asn Leu
225
                    230
                                         235
Gln
      <21.0> 115
      <211> 366
      <212> DNA
      <213> Homo sapien
      <400> 115
getetttete teecetecte tgaatttaat tettteaach tgcaatttqe aaggattaca
                                                                        60
cattluacty tyatytatat tytyttycaa aaaaaaaaaa gtytetttyt tisaaattio
                                                                       120
ttggtttgtg aatocatott gottlitteer cattggaact agtcattaac coatetetga
                                                                       180
actggtages associating agagetagte talcageste tgaeaggtga attggstggt
                                                                       240
totongaacr atttcarcca gacagodtqt ttctatortg titaataaat tagtttgggt
                                                                       300
tototacatg cataacaac cotgetocaa totgtoacat aacagtotgt gacttgaagt
                                                                       360
ttagtc
                                                                       366
      <210> 116
      <211> 282
      <212> DMA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1) ... (282)
      <223> D = A,T,C Or G
      <400> 116
acaaagatga accatttoot Atattatago aazattamaa totacoogta ttotaatatt
                                                                        60
gaqaaatgag atnaaxcaca atnttataaa qictadttag agaagatcaa gigaccicaa
                                                                       120
agactitact attiticatet titaagacac atgetiteto ciattitagi aacciggito
                                                                       180
ataugttama casaggetam figtgaaC6qC agagaggatt figtfiggcega mantchatgt
                                                                       24 D
```

<21.0> 1.17

toaatoings solatoiana toacagacat tiotaticot ti

<211> 305

```
<212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(305)
      <223> n = A,T,C or G
      <400> 11.7
acadatyteg etteactged tudttagatg ettetggtda adatanagga adagggacea
                                                                         60
tatttatect coolectyda acaattgoss sataamacaa aatatsigaa acaathgoss
                                                                        120
autaaygosu aatatatgaa acamuaggto togagatati yyunatoagt camtgaagga
                                                                        160
tactgatere tgetemetyt cetaatgeag gatgtgggaa acagatgagg teacetetgt
                                                                        240
gadtgdoora gettartgdd tgtagagagt ttrtangdtg cagttcagad agggagaaat
                                                                        300
tgggt
                                                                        305
      <210> 118
      <2115 71
      <212> DNA
      <213> Homo sapien
      <220×
      <221> misc_feature
      <222> (1)...(71}
      <223> \pi = A, T, C or G
      <400> 118
acceaggigt nigsatchet gaegigggs telethatic regearaate igagiggaaa
                                                                         60
aantootegg t
                                                                         73.
      <210> 119
      <211> 212
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(212)
      <223> n - A,T,C or G
      <400> 119
autocogetty gighcaguag vacgiggeat igaacaingo aaigiggagu cuaaaccaca
                                                                        60
gaaaatgggg tgaaattggc caactitcta tnaacttatg ttggcaanti tgccaccaac
                                                                       120
agtaagrigg cocitotaat aaaagaaaat tgaaaggitt ciracteeno ggaattaant
                                                                       180
satggantca aganacteen aggeetemge gt
                                                                       212
      <210> 120
      <211> 90
      <212> DNA
      <213> Homo sapien
      <220>
      :22l> misc_feature
      <222> (1)...(90)
      <223: n = A,T,C or G
```

```
<400> 120

    ectogitipes nateaggige coccessing t cacestiges gastectic typicitipes

                                                                            60
 cteegeegge geagaavatg etggggtggt
                                                                            90
       c210> 121
       <211> 218
       <2125 DNA
       <213> Romo sapien
       <220>
       <221> misc_feature
       <222> {1}...(218)
       <223> n = A, T, C \text{ or } G
       <400> 12]
tgtencgtga anacgacaga nagggttgtc aaaaatggag wancettgae gtcatttga
                                                                           60
gaataagatt tyoteesaga tittyyggota saadatyytt attyggayac attictygaaq
                                                                           120
atathcangt ammittangga atgasticat ggttctttig ggamttctt tacgathgcc
                                                                          180
agoatanact tratgtgggg atancageta coottgta
                                                                          218
       <210> 122
       <211> 171
       <212> DNA
       <213> Homo supian
       <4Q0> 122
taggggtgla tycaactgta aggacaaaaa ttgagactca actygcttaa ccaatanagg
                                                                           60
 Cattigiting etcatggaad aquaagtogg atggtguuge atcitcaglg etgcatgagt
                                                                          120
 raceaccoug guggggteat cigigcuaca ggtocotgit gacagigegg t
                                                                          171
       <210× 173
       <211> 76
       <212> DKA
       <213> Homo sapien
       <220>
       <221> misc_feature
       <222> (1)...(76)
       4223 > n = A, T, C \text{ or } G
       <400> 123
thtagogtga agachacaga atggtgtgtg ctgtgCtate caggaacaca tttattatca
                                                                           60
 ttatcaante ttgtgt
                                                                           76
       <210> 124
       <211> 131
       <212> DMA
       <27.3> Homo sapien
       <400> 124
 acotttocco maggocamiq toctgigigo takoiggicog grigoagyac ageigoaati
                                                                           ь 🛛
 castgtydty ggteztatgg aggggaggag aetetasast ugocaattit attotettgg
                                                                          120
 ttmagatttg t
                                                                          131
```

```
<.210> 125
       <211> 432
       <212> DNA
       <213> Homo sapiso
       <400> 125
 actitateta etggetatga aatagatggt ggaaaattge gttaceaaet ataceaetgg
                                                                         60
 cttgaaaaag aggtgatago tettcagagg acttgtgact tttgctcaga tgetgaagaa
                                                                        120
 ctacagtetg catttggcag aaatquagat gaatttggat taaatgagga tgctgaagat
                                                                        180
tigecteace adacadagt guascaacig agagaaaitt ticaggaada magacagtag
                                                                        240
Ctettgaagt ateagteact tittgagaatg titettagtt actgeatact teatggatee
                                                                        300
ratggtgggg gtertgeate tgtasgaatg gaattgattt tgcttttgca agaatctcag
                                                                        360
Caggaaacat cagaaccact attitictage cetetgicag agcaaacete agtguotete
                                                                        420
ctctttgatt gt
                                                                        432
      <210× 126
       <211> 112
      <212: DWA
      <213> Homo sapien
      <400> 126
acaraartig aatagtaaaa tagaaartga gelgaaatti etaatteaci utetaarrat
                                                                         60
aghasgests statterre chaggestos connatatt atassautt gt
                                                                        112
      <210> 127 -
      <211 > 54
      <212> DNA
      <213> Homo sapien
      <400> 127
accaegaaac caceaecaeg atggzageat castcoectt gecaegraca goag
                                                                        54
      <210> 12R
      <21.1 > 323
      <212> DNA
      <213> Homo sapien
      <400> 128
addressing tastigitti gitgittest tittictes igtereeert Claceagere
                                                                        60
accigageta acaguatges satggaagge Cauccagett totoctitge tetotgetos
                                                                       120
ttotototga agtotaggtt accounting gggaccount ataggonata accounts
                                                                       180
ccasageatt tggacagttt cttgttgtgt tttagaatgg ttttccttt tcttagcett
                                                                       241)
tteetgeasa aggeteacte agterettge ttgeteagtg gaetgggete eccaggget
                                                                       300
aggotgoott cttttccatg too
                                                                       323
      <210> 129
      <211> 192
      <212> DBA
      <213> Homo sapien
      <220>
      <227> Misc_feature
      <2222 (1) ... [192]
      <2235 H = A,T,C or B
```

```
<400> 129
adaladatyt gtgtatattt tiaaalalda uttttgtato antolgadtt titagoatad
                                                                          60
tgaaaacaca ctaacelaat tintgigaac caigatcaga incaacccaa alcaitcaic
                                                                         120
tagcacatte atetgigata masagatagg igagtitest throtteaus itiggcoastg
                                                                         180
gotaaacaaa gt
                                                                         192
      <210> 130
      <211> 362
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1) ... (362)
      <223> n = A.T.C or G
      <400> 130
conttitut tagantgagt agantgusta titgaanatt tanonacaac cicintgana
                                                                         Бa
tatautgacy caacaaaaag gtgutgttta gtcctatggt toagtttatg cucutgacaa
                                                                        120
gitterating intitineer atcitchage tautogingt atcommonate traitagies
                                                                        180
ttotgtatto cattitgtta acquotggta gatgtaacct gotangaggo taactttata
                                                                        24 D
cttatttasa agcucttatt ttgtggtcat laadatggca atttatgtgc agcacttat
                                                                        300
tacageagga ageorgists gottogitts adagetettt getaatetta adaagtaatg
                                                                        360
99
                                                                        362
      <210> 131
      <211,> 332
      <212> DNA
      <213> Home sapien
      <220>
      <221> misc_feature
      <222> (1)...(332)
      <223> n = A, T, C or 6
      <400> 131
ctttttgasa gatcgbbtcc actcctgtgg ecalCttgtt traatggagt ttoccatgca
                                                                         60
gtengactyy taiggiiges gciglocaga tabaaacahi iguaqagoio cabaatqaga
                                                                        120
gttrtccrag gttcgccctg ctgctccaag tctcagoage agretetttt aggangeate
                                                                        180
ttotgaacta gattaagges gottgtaaat etgatgtgat ttggtttatt atccaactaa
                                                                        240
rttrcatrig biatcatigg agaaageeca gactcoccan gacnggtacg gattgiggge
                                                                        OOE
Atanmaggat tgggtgaagc tggcgttgtg gt
                                                                        332
      <210> 132
      <211> 322
      <212> DWA
      <213> Homo mapien
      <220>
      <221> misc_feature
      <222> {1}...(322)
      <223> \pi = A, T, C \text{ or } F
      <400> 132
actitiques iffiglatat atomaceato linggamenti circigeass chaqqiqtro
                                                                         60
```

```
agiggetaag agaackogst titossgeaat teigassggs amsecagest gacacagest.
                                                                          120
 ctreasattre caaacagggg ctctgtggga axaatgaggg aggacetttg tatrtcgggt
                                                                          180
 tttagczagt taaaatgeen etexczegaa aggettetlt eteszcaaag egeagagttg
                                                                          240
 ggatgettet kaammaart tiggiagege aamtaggaat getnaeteet agggaageet
                                                                          300
 gtaacaatet acaattggte ca
                                                                          322
       <210> 133
       <211> 278
       <212> DWA
       <213> Homo sapien
       <220>
       <221> misc_feature
       <222> (1)...(278)
       \langle 223 \rangle n = A,T,C or G
       <400> 133
acaageette acaagtitaa etaaattggg attmatetti etgianttat etgestaatt
                                                                          60
ettyttttte ttteratetg geteetgggt tgaraatlitg tggaaaraan tetuttgeta
                                                                         120
ctatttaaaa sekateacaa atettteeet Utaagetatg tineatteaa aetatteetu
                                                                         180
chattuetgt titgleaaag assibatatt titeaaaata tgintatitg tilgatgggt
                                                                         240
cccargasar actaataaaa accaragaga ccagcotg
                                                                         278
       <21Up 234
       <211> 121
       <212> DNA
       <21.3> Homo sapien
       <22D>
      <221> misc feature
      <2225 (1),...(121)
      <223 > n = A,T,C or G
      <400> 134
gtttanaaaa cttguutkgu tocatagagg aaagkatytt daactttgta ttttaaaana
                                                                         60
tgatlctctq aggttaaact tggttltcaa atgttatttt lacttgtatt ttgcltttgg
                                                                        120
                                                                        121
      <210> 135
      <211> 350
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(350)
      \langle 223 \rangle n = A,T,C or G
      <400> 135
actionados atgochagos catoegasto optoazagas catoagtata atcobataco
                                                                         60
atancaagig gigaciqgit aagegigega caaaqgicag eiggeacatt aetigigige
                                                                        120
assourgata ettitgitet asgisggase tagiataças incetaggan igglacida
                                                                        180
gggtgeecen caactootge ageegeteet chatqooagn contanaaga aactteget
                                                                        240
ccaccteast cangeceting genetation etherating ethinaces gillnethan
                                                                        300
ttcccaagga tgceaaqvot ggtgctcaac tcccuggggcg tcaactcegt
                                                                        350
```

```
<210> 136
      <211> 399
      <212> DNA
      <2.13> Homo mapien
      <220×
      <221> misc feature
      <222> (1) ... (399)
      <223> \pi = A,T,C or G
      <400> 136
tgtaccataa ayacgacaga agttqcatgg cagggacagg quagggccga ggccaggqtt
                                                                         60
gotgtgattg tatoogaata ntootogtga gaaaagataa tgagatgaog tgagcagoot
                                                                        120
gragactigi giotgeette aanaagedag aeoggaagge cotgeetgee tiggetetga
                                                                        1.80
cotggcggcc agccagccag comcaggtgg gcttcttcct titigtggtga caacnecaag
                                                                        240
aaaactgceg eggcccaggg tragglytne gtgggtangl geccataaaa ceccaqqtgc
                                                                        300
toocaggaar engggnaaag goodterrea nntacagoca geatgeonad togeotrate
                                                                        360
ggtgcagang gatyaageag ccagntgute thetgtggt
                                                                        399
      <210× 137
      <211> 165
      <212> DWA
      <213> Homo sapien
      <22D>
      <221> misc_feature
      <222> (1) . . . (165)
      \langle 223 \rangle n = A,T,C or G
      <400> 137
actggtgtgg ingggggtga tgctggtggt anaagttgan gtgacttcan gatggtgtgt
                                                                         60
ggeggaegt tgtgaacgta gggatgtaga ngttttggcc gtgctaaatg egcttoggga
                                                                        130
ttggetggtr ccactggtgg teartgteat tggtggggtt ertgt
                                                                        165
      <210> 138
      <211> 338
      <212> DNA
      <213> Homo sapien
      <230>
      <221> misc feature
      <222> (1)...(338)
      <223> n=A,T,C or G
      <400> 138
acteactgga atgucacatt cacaacagee tuagaggtot ghgaaeacat taatqqctcu
                                                                         60
ttaacttotc cagtaagaat cagggacttg aaatggaaac gttaacagcc acatgcccaa
                                                                        120
tgctgggcag tetcccatge cttccacagt galagggctt gagamaate acatccattg
                                                                        180
tCatgtgttt ccagcCaCac canaaggtgc ttggggtgga gggctggggg catananggt.
                                                                        240
cangcotoag gaageetesa gttocattea getttgccac tgtacattec ccatntttaa
                                                                        300
damagetgat goottitttt titttttttg taamatto
                                                                        33B
      <210> 139
```

<211> 382

```
<212> DNA
      <213> Homo Rapien
      <400> 133
gggastottg gtttttggca totggtttgc chatagooga ggccactttg moagascaaa
                                                                         60
gaaagggart tegagtaaga agglgattta ragerageel agtgreegaa gtgaaggaga
                                                                        120
attrasacky accregical treiggists agestystic gricacoges tateateign
                                                                        180
attigeetta eteaggiget accognaciot gaccectgat giolgiagti iracaquatg
                                                                        24D
cottatitiqu offoracec ceacegggcc coctatitit toggetgigt titteetaat
                                                                        300
greagetarg recension tectroards entertees treetages engergapty
                                                                        360
gcclggaact tgtttaaagt gt
                                                                        382
      <210> 140
      <211> 200
      <21.2> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(200)
      <223> D = A,T,C or G
      <400> 140
acceasanche ottlotytty tytingetit tuctataggy yttingctin tictaaanat
                                                                        60
actiticati taacanctit tottaagigt caggotgoac titgotocat anaattatig
                                                                       120
tittenacall toaactigta tgtgtttgtd tottanagea tiggtgaaat cacatatet
                                                                       180
mtattcages tasaggagas
                                                                       200
      <210> 141
      <211> 335
      <212> DNA
      <213> Homo sapien
      <220ء
      <221> misc_feature
      <222> (1)...(335)
      <223> \pi = A,T,C or G
      <400> 141
actitatiti caassicacid ataigitgea asasacadat agaasaataa sgittggigg
                                                                        &D
gggtgctgad taaacttcaa gtcacagact tttatgtgac agattggagc agggtttgtt
                                                                       120
atgratgtag agaaccoddu ctaatttatt aascagguta gaaacaggct gtctgggtga
                                                                       180
eatggitots agaaccated sattcaccis teagatedits atanactage tettcagate
                                                                       240
tittictacc agticagaga inggitaatg actanticca aiggggaaaa agcaagaigg
                                                                       300
attemedac caagtaattt taaacaanga caett
                                                                       335
      <210> 142
      <211> 459
      <2125 DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(459)
      <223> \pi = A, T, C or G
```

```
<400> 142
accagginas battgodada tatatootti ocaabbgogg gotsaacaga ogtgrattte
                                                                         60
gggttgttta asgacascop sgctteatet caagagaaat tgtgacettt catggagtat
                                                                        120
etgatggaga aadcmetgag tittgacaaa tehtabittm ticagatage agtetgatea
                                                                        180
Cadatygico aacaacacin saadaabaaa toosatatna toagatgita sagattaate
                                                                        240
ttcaaacaho abayoosatg atgreeeget tgeetataat eteleegaca taasareaca
                                                                        300
tCaacactc agtggccacc eaaccattca gcaragettc Cttaactgtg agctgtttga
                                                                        360
agetaccagt Ctyxycacta tigactaint titlicanget rigaalaget ctagggatet
                                                                        420
Caycangggt gggaggaacc agctcaacct tggcgtant
                                                                        459
      <210> 143
      <211> 140
      <212> DNA
      <213> Homo sapien
      c400> 143
acatttoott cracraagto aggaeteetg gettetgigg gagttettat cacetgiggg
                                                                        60
apatecaaac agtototot agazaggzat agtgtcacca acceraccoa totocotgag
                                                                        120
accetscome trecetstst
                                                                        140
      <270> 144
      <211> 164
      <2125 DRA
      <213> Homo Rapien
      <220>
      <221> misc_feature
      <222> (1) ... (164)
      \langle 223 \rangle n = A,T,C or G
      <400> 144
acticagies Cascataces teacascatt aduptatet tyccatchit gicatthict
                                                                        БÜ
stotataces etct.coctic tyunasesan asteactane casteactta tecanatity
                                                                       120
aggcasttee tocatatitg tittcastee ggaussaag eigt
                                                                       164
      <210> 145
      <211> 303
      <212> DNA
      <213> Homo sapiem
      <220×
      <221> misc feature
      <222> (1) ... (303)
      <223> n = A,T,C or 0
      <400> 145
acqtaqacca tecaactiiq taliiqtaat ggcaaacatc cagnagcaat teciaaacaa
                                                                        6 D
actggaggst attituaces aattatessa ficationed typestocis etraggetat
                                                                       120
graggacage tatestaagt eggeecagge atceagatae tuccattigt ataaucttea
                                                                       180
gtaggggagt Coateraagt garaggtota ateaaaggag gaaatggaac ataagrocag
                                                                       240
tagtaaaato tigotlaget gaaacagree rasaageett acrgeegigg igattaceat
                                                                       300
                                                                       303
```

<210> 146

```
<2115 327
       <212> DNA
       <213> Nomo gapien
       <220>
       <221> misc_feature
       <222> (1)...(327)
       <223> n = A,T,C or G
       <400> 146
actgragete aattagaagt ggteretgae Uttoateane Etetenotga geteratgae
                                                                         60
autquuutug agtgacteat tgetetugtt ggttgagaga guteetttge caadaggeet
                                                                        120
creagicagg grigggethi gittering cadattotag caacaatatg ciggeracti
                                                                        180
cctquacagg gagggtggga ggagccaqca tggaacaagc tgccactttc tadagtagcc
                                                                        24 D
agacttgere etgggeetet eacacetact gatgacette tgtgeetgea ggatggaatg
                                                                        300
taggggtgag otgtgtgaet ctatogt
                                                                        327
      <210> 147
      <211> 173
      <212> DNA
      <213> Homo Banien
      <220>
      c221s misc_feature
      <222> (1) ... (173)
      <223> D = A,T,C or G
      <400> 147
acattgttii iitgagataa agcattgana gagctctcch taavgtgaca caatggaagg
                                                                       . &D
actggmacor ataceracat cultiputcig agggatamit ticigatasa grutigeigt
                                                                       120
atattcaage acetatette tatattatte agttccatet ttatagecta ett
                                                                       173
      <210> 148
      <211> 477
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(477)
      <223> n = A,T,C or G
      <400> 148
demacracti tatelestey autititaes commettes tractytyce titetatect.
                                                                        60
atgggatata trattigatg circettica tracacatat atgaataata cactoatact
                                                                       120
genetactae etgetgemut matemente dettectgte etgadeetga agenattggg
                                                                       180
gtgureutag tggccatcag tccanucetg caccttgage cettgagetc cattgeteac
                                                                       240
nccancess etemorgace coatectett acacagetae etectigete tetaaeecca
                                                                       300
tagattaint comambides towartmagh techettmac actitations acatghores
                                                                       360
caccacteget angrettete engecandar aracacadar acarnearac acadaratat
                                                                       420
ccaggeacag gotacotoat otteacaato accoettaa tlaccatget atggtgg
                                                                       477
      <210> 149
      <211> 207
      <212> DNA
```

```
<213> Homo sapien
      <400> 149
acagitgiat tatestelle agemetasan tigemetgag ageattteag agggaageme
                                                                         60
laacgtattt tagagagera aggaaqgttt etgtggggag tgggatgtaa ggtggggeet
                                                                        120
gatgataaat aagagicago caggtaagtg gglagtgtgg tatgggcaca gtgaagaaca
                                                                        180
tttcaygoog agggaacage agtgaau
                                                                        207
      <210> 150
      <211> 13,1
      <212> DNA
      <213> Homo Sapien
      <22D>
      <221> misc feature
      <222> (1) ... (111)
      <223> n = A_iT_iC \text{ or }G
      <400> 150
accetigatit cattgriggt organggasa recesectate tastiteget assacsiggg
                                                                         60
cacttaaaly tystemetat tiggacity tametaning caluttingg t
                                                                        111
      <210> 151
      <213> 196
      <212> DNA
      <213> Homo sapien
      <400> 151
Agogoggeag gtcatattya acatteraga tacctatoat tactogatgo tgttgataac
                                                                        60
agraegatog Ctttgaactr agggtceccu coagctattg geocttacta tgaeaaccat
                                                                       120
994taccarc eggaamaccc Ctatecegea cagencacty tggteencac tgtetacgag
                                                                       180
gtgratccgg ctcagt
                                                                        196
      <210> 152
      <211> 132
      <212> DNA
      <213> Homo sapien
      <400> 152
acagcartti cacatgtaag aagggagaaa ttortaaatg taggagaaag ataacagaac
                                                                        60
Cubeccettt teatclagts granameet gatgethtat gitgacagga atagaaccag
                                                                       120
gagggagttt gt
                                                                       132
      <210> 153
      <211 > 285
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> {1}...(285)
      <223> 11 - A,T,C or G
      <400> 153
acadimetro nganaggees etyyorgtgg tgtcatggee termaacatg saagtgtrag
                                                                        60
```

```
offetgetet tatgtertea tetgedamet etttaccatt Uttatecteg etcagdagga
                                                                         220
 gcacatcaet esegtouses stollggact tggccttggc tlggaggses tostcascac
                                                                         180
 outagetagt gagggtgegg egeogetout ggatgaegge atetgtgaag tegtgeadoa
                                                                         240
 gtotgcaggo cotgtggaag opcogtocac anggagtmag gaatt
                                                                        2.85
       <210> 154
       <211> 333
       <212> DNA
       <213> Homo sapien
       <400> 154
accacaging tgbbgggcow gggetteatg accounters tgaaaagcoa tattateaco
                                                                         60
accccaatt titeettasa tateettase tgaaggggte agcetettga etgesaagse
                                                                        120
retasgergg ttacacaget ametrecart ggecotgatt tgtgamattg otgetgeetg
                                                                        1B0
attyguacag gagtegaagg tgtteagete ereterteng tggaacgaga etetgatttg
                                                                        24 D
agittcacaa attotogggo caccingina thgotonici gaaataassi coggagaatg
                                                                        300
gbcappedtg teteaterat atggatette ogg
                                                                        333
       <210× 155
       <211> 308
      <212> DNA
       <213> Homo mapien
      <220>
      <221> misc_feature
      <222> |1}...(308)
      <273> n = A,T,C or G
      <400> 155
actggsseta ataaaaccca catcacagtg ttgtgtcasa gatcatcagg gcatggatgg
                                                                        6 D
quangigett igggaactgt aaagigeeta acacaigate gaigaittii gilaiaatai
                                                                       120
tigaatcang gigoatacaa arteienigo olgotoetee igggnoodag coecageene
                                                                       180
abcacagete artgrictgt toatcompge composited gragetgatt chickinget
                                                                       240
gettttager tecanaagtt tetetgaage caaceaaace tetangteta aggeatgetg
                                                                       300
900ctggt
                                                                       30R
      <210> 156
      <211> 295
      <212> DWA
      <213> Hono sapien
      <400> 156
accttgrteg gtgcttggåå catattagga artcaaaata tgagatgata edagtgerta
                                                                        60
ttattgatta ctgagagaac tgttagacat ttagttgaag attttctaca caggaactga
                                                                       120
gaataggaga ttatgtttgg proteatatt ctctcctatc ctcrttgcct cattctatgt
                                                                       180
ctaatatatt ctcaatcaaa taaggttage ataatcagga aatcgaccaa ataccaatat
                                                                       240
asaancegst gictmienti aagelittos satagaaase aaallascag anial
                                                                       295
      <210> 157
      <211> 126
      <212> DNA
      c213> Homo sapiem
      <400> 157
acaugittaa atagignigh cantyignat gigelgasat gigaaateea eeanallitut
                                                                        бD
```

```
gaagagcaam acaaattong tostgrauto totatoning gtoginggra tatonghood
                                                                         120
cttagt
                                                                         126
      <210: 158
      <211> 442
      <212: DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> {1}...(402)
      <223> n - A, T, C or G
      <400> 15B
accoactygi etiggasaca cccalcotta atacgatgat tittutgiog igigasasig
                                                                         60
aannnagoeg gotqooota gtoagtoott nnttonagag aasaagagat ttgagasagt
                                                                       120
gootgagtaa ttcaccatta anttootooo ocaaactoto tgagtottoo ottaatatt
                                                                        180
ctggtggttd tg&cca&ayd aggteatggt ttgttgagda tttggggatdd Cagtgaagta
                                                                        240
natgittigia geetigeata ettageeett eecaegeaca aarggagigg cagagiggig
                                                                        300
ersaccetgt thtcccagte eacglagaes gattcacagt geggaattet ggaagetgga
                                                                        360
nacadacada ctriffeed educadasch offaganges cafeagagac forscotti
                                                                        420
tgtteattet ctgatgtcct gt
                                                                        442
      <210> 159
      <21.15 498
      <212> DNA
      <213> Home Sapien
      <22D>
      <221> misc_feature
      <222> (1)...(498)
      <223> n = A, T, C or G
      <400> 159
acticcaggi aacghigilg buloogitga grotgaachy atgggigacg tiglaggitc
                                                                        бО
tocaacaaga actgaggttg cagagrgggt agggaagagt gctgttccag ttgcacctgg
                                                                       120
getgetgtgg actghtgttg attectoact acggeccaag gttgtgggaac tggcannaag
                                                                       180
gtgtgttgtt gganttgage tegggegget gtggtaggtt gtgggetett caacagggge
                                                                       240
tgctgtggtg ccgggangig aangtgttgt gtracttgag cttggccagc tctggaaagt
                                                                       300
antanattot teetgaagge cagegettgt ggagetggea ngggteanty ttgtgtgtaa
                                                                       360
egaaccagig cigrigiggg igggigiana icriccedaa agerigaagi talggigion
                                                                       420
traggtaana atgregette agreterete ggengetgtg gaaggttgta nattgtracc
                                                                       480
aagggaataa gctgtggt
                                                                       498
      <21.0> 160
      <211> 380
      <212> DNA
      <213> Homo sapion
      <220>
      <221> misc_feature
      <222> {1} ... (380)
      c223> D = A,T,C \text{ or } G
      <4005 160
```

```
accledated agottodets coasactede anggagadat cascotetag reagggadad
                                                                         60
agetteagga taetteeagg ágacagager annagragea aanacasatat tecuatgret
                                                                        120
ggagcatggc atagaggaag ciganaaatg tggggtciga ggaagccatt tgagtctggc
                                                                        180
cartagarat ricatrager autigiga agagaterou cuigarrera gatyretete
                                                                        240
crearctter december caracttgag utttocarts tgtateattu taacatoutg
                                                                        300
gagaamaatg gragittigac Oyaaccigii cacaacgota gaggeigatt totaacgaaa
                                                                        360
cttgtagaal gaageetgga
                                                                        OBE
      <210> 161
      <211> 11€
      <212> DNA
      <213> Homo sapien
      <400× 161
actorscate ecototgago aggregates ostroaaggs statitesco tigocostom
                                                                         60
castificate tiggescotte tecastiggt gottaatee tegasagage atgi
                                                                        114
      <210> 162
      <211× 177
      <212> DNA
      <233> Homo sapien
      <400> 162
activition togratica a tratactian transfer at atoctor at atateman
                                                                        420
gtittactac teigataatt tigtaaacea ygtaaceaga acateeagir atacagetit
                                                                       120
tgghgatata teachingca ataaccoagt ciggigatac ataaaactac irachgi
                                                                       177
      <210> 163
      <211> 137
      <2125 DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> {1}...(137)
      <223> n = A,T,C or G
      <40U> 163
catttatada gacaggogtg aagadattom ogacaaaaac gugmaattot atccogtgar
                                                                        60
canagaaggo agctacgyot actoctacat cotggogtgg gtggcottcq cotgeacett
                                                                       120
Catcagogge stgatgt
                                                                       137
      <210> 164
      <21),> 469
      <212> DNA
      <213> Homo sapien
      <230>
      <221> misc_feature
      <222> (1)...(469)
      \langle 223 \rangle \pi = A,T,C or G
      <400> 164
cttatranaa tgaatuttet eetgggnagn gltutgatet ttgnnachtt ogtgaettta
                                                                        60
tgcaatgeat catgetatht cataceteat gagggagthe eaggagatte aschaggada
                                                                       120
```

120

```
Egentygate tempaggada camacacce atamactegg agtggengae tgacaactgl
                                                                        180
gagacatgca cttgctacga 880%gdaatt tcatgttgcu cccttgtttc tacacctgtg
                                                                        24 D
ggbtatgada aagacaactg ccassgasto LtCasgaagg aggactgdaa gtatatogtg
                                                                        300
giggagaaga aggacccasa 6889%cotgi teigicagig maiggataai ciaatqici
                                                                       360
tobagtaggo wowaggeter caggreaggo obcattetes totggcotot astagtoaat
                                                                       420
gattgtgtag ccatgcctat cagtamazag atntttgagc ammeacttt
                                                                        469
      <210> 165
      <211> 195
      <212> DNA
      <213> Humo sapien
      <220×
      <221> misc_feature
      <2225 (1)...(195)
      <223> n = A,T,C or G
      <400> 165
acagtifitt etanatatug acattgongg Cacttgigti ragtiticata angeiggigg
                                                                        6Ú
Atoogotyte ateractatt CCtlegerag agtaaaaalt attottatag coretytoer
                                                                       120
tgcaggccgc Ccgcccqtag ticicgticc agtcqtotig gcacacagggg iqccaggact
                                                                       180
teetetgaga tgagt
                                                                       195
      <210> 166
      <211> 383
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> {1}...(383)
      <223> n = A,T,C or G
      <400> 166
acabettaet agtgtggrac atcagggeed catcagggtc acagtoactc atagcctege
                                                                        60
egaggtegga gtdd&cadda eeggtgtagg tgtgdbCaat ettgggettg gegeeeaeet
                                                                       120
ttgg&gaayg gatatgetge acacacatgt coacaaagec tglgaacteg ccaaagaatt
                                                                       180
tttgragaer ageotgagen appggragat gttcagette agetecteet tegteaggtg
                                                                       240
gatgodaacd tegtetangg teegtgegaa getggtgtee achtdaecta caacctgggd
                                                                       300
gangatetta taaaqagget eenagataaa eteeseqaaa ettetetggg agetgetagt
                                                                       360
nggggccttt ttggtgaact f.tc
                                                                       383
      <210> 167
      <211> 247
      <212> DWA
      <213> Homo sapien
      <220>
      <22)> misc feature
      <222> {1}...(247)
      <223> \pi = A,T,C or G
      <400> 167
acagageesg acctiggees tasatgasne agagattasg actssacced aagteganat
                                                                        ۴ñ
```

tggagcayaa autggagcaa gaagtgggdu tggggctgaa glagagacca aggccactgu

```
tatanccate cecagagoos actotoaggo caaggonatg gttggggceg anccagagac
                                                                        180
tematetgan tecaaagtgg tggetygmae actggtemtg acanaggeng tgactetgae
                                                                        240
tgangtc
                                                                        247
      <210> 168
      <.211> 273
      <212> DNA
      <213> Romo sapien
      <220>
      <221> misc_feature
      <222> (1)...(273)
      <223> n = A,T,C or G
      <400× 368
acticiangt titiriagang igganggatt giantcatco igannatggg titeritoma
                                                                        60
matecetean colligitett emenacigie tatacigana gigicalgit tecacaaagg
                                                                       120
octoacet gageetgnat titicactout coolgagaag contitionag tagggtyyge
                                                                       180
Battoecase Etentigona chagettern aggebbtote ecctggaass stocagettg
                                                                       240
agtoccagat acapteatgg grigoccigg goa
                                                                       273
      <210> 169
      <211> 431
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(431)
      <223> n = A,T,C or G
      <400> 159
acagontigg difeeceasa etecacagin teagigosga aagainatet tecagoagin
                                                                        6ብ
ayetengace agggtcassg gatgtgacat caacagttic tgytttcaga acaggttota
                                                                       120
ctactgloss stysecococ abactlocte sasgetgtg grasgitits cacaggigsg
                                                                       180
ggergeagra agggggrant tactgatgga carcatette tetgtatart coacactgae
                                                                       240
rtigncatigg goamager ctaccanase ascestagga teactgoigg geamcageto
                                                                       300
achorostos etgaraced adatadesso adesotáces settiestar ateconotág
                                                                       360
amagigatot galaciggat tettmattae ettemmange tienggggge emicagetge
                                                                       420
togazcaetg a
                                                                       431
      <210> 170
      <211> 266
      <212> DWA
      <213> Homo mapien
      <220>
      <221> misc_feature
      <222> {1}...[266}
      <223> \pi = A.T.C or G
      <400> 170
accigigge vaggetgita igecigige gyeigetgaa agggagtiea gaggiggage
                                                                       60
teamggaget rigeaggest titycemane ciricesnag canagggage aacctauset
                                                                       150
ccccgctaga eagacaccag attggagton tgggaggggg agttgggggtg ggcatttgat
                                                                       180
```

```
gtatactigt coccigaatg aangageeng agaggaanga gecgaanaig anallygeet
                                                                        240
traaagetag gggb@tggda ggtgga
                                                                        266
      <210> 171
      <211> 124B
      <222> DNA
      <213> Homo sapien
      <220>
      <221> misc_featuro
      <222> {1}...(124B)
      <223> D - A,T,C or G
      <400× 171
ggnagodaww trataaacgg cgaggactgo agreegrant ogdagcertg gnaggeggca
                                                                        6 D
ctggtcatgg aaaacgaatt yttotgctcg ggcgtoctgg tgcatccgca gtgggtgctg
                                                                       120
tragorgeau actyttteea gaagtgagty cagageteet acacestegg getygyeetg
                                                                       180
cacagtettg aggeegacea agageeaggg ageeagatgg tggaggeeag ecteteegta
                                                                       240
eggcacccag aytaemacag accettgete gotzmegace teatgetemt caagttygme
                                                                       300
yaateegigi eegaghdiga cadomicegg ageatdagda tigetiegea gigeretare
                                                                       360
gcggggaact citigoctogi ticiggctgg ggiotgcigg ogeacqgcag aatgcctacc
                                                                       920
gtqutgeagt gegtgaaegt gtegqtggtg tetgaggagg tetgeagtaa getetatgae
                                                                       480
regrigiane accounter giteigegre ggoggagge aagaccagaa ggacinotgo
                                                                       540
ascentance etgggggee eetgatetge aaegggtack tgeagggeet tgtetette
                                                                       600
ggaaaagree egtgtggova agttggrgtg ecaggtgtet acareaacct etgraaatte
                                                                       660
actgeglyga tagagaaaac cgtccaggod agttaactch ggggactggg aaccdatgaa
                                                                       720
attgaccere assiscator tgeggaagga streaggast atetgitere agooceteet
                                                                       780
erct.cagged exagantees agreecesse dectectree tessaucasa antacagate
                                                                       840
ducagoceet entendicag adduaggagt coagacddd cagoeeeten Uductoagae
                                                                      900
ccaggagton agovectest cesteagaco daggagtesa gacoccodag encetenton
                                                                       960
ctdayaccea ggggtreagg codddaacce cterteedtd agaetragag gtddaageed
                                                                      1020
ceaserents atteccessa ceessaggts caggicoeas erectentes etragaces
                                                                      10B0
goggteezat gecacetaga ethiceetgt acacagiges eestigige acgitgace
                                                                      1140
parettacea gltgqttttt cattttingt coctttoore tagetceaga matmagttt
                                                                      1200
өөүхүйхүлү саагааага жахоххотт вагаагаан окалгааг
                                                                      1248
      <210> 172
      <211> 159
      <212> PRT
      <213> Homo sapien
      <220>
      <221> VARIANT
      <222> (1)...{\15$}
      <223> Xes - Any Amino Acid
      <400> 172
Met Val Glu Ala Ser Leu Ser Val Arg His Pro Glu Tyr Ash Arg Pro
                                    10
Leu Leu Ala Asn Asp Lou Met Leu Ile Lys Leu Asp Glu Ser Val Ser
            20
                                25
Glu Ser Amp Thr Ile Arg Ser Ile Ser Ile Ala Ser Gln Cye Pro Thr
                            40
Ala Gly Asn Ser Cys Leu Val Ser Gly Trp Gly Leo Deu Ala Asn Gly
    50
                        55
```

```
Arg Met Pro Thr Val Leu Gln Cys Val Asn Val Ser Val Val Ser Glu
                     70
                                         75
Glu Val Cys Ser Lys Leu Tyr Asp Pro Leu Tyr His Pro Ser Met. Phe
                                     90
Cys Alo Gly Gly Gln Xas Gln Xas Asp Ser Cys Asn Gly Asp Sor
                                 302
Cly Gly Pro Len Ile Cyr Asn Gly Tyr Len Gin Gly Leu Val Ser Phe
        115
                             120
                                                 125
Gly Lys Ala Pro Cys Gly Gln Val Gly Val Pro Gly Val Tyr Thr Asn
                         135
Leu Cys Lys Phe Thr Glu Trp Ile Glu Lys Thr Val Gln Als Ser
145
                     150
                                         155
      <210> 173
      <211> 1265
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <2225 (1)...[1265]
      4223 > D = A, T, C \text{ or } G
      <400> 173
ggcagcccgc actogoagee ctggcaggcg gcwctggtea tggasaacga attgttctgc
                                                                        Б0
tegggegier iggigrater gokkinggig cigicagery exceptit coageacter
                                                                       120
tacarcateg gyntgggoot gearaginti gaggeogaen aagagnnagg gageragatg
                                                                       180
gbggaggoom gentetregt acggnacedm gagtacmaca gacdettget rgctmacgme
                                                                       240
ctratgetea teaagttaga egaateegtg teegagtetg acaceateeg gageateage
                                                                       300
attgettege agtgeeetae egeggggaae tettgeeteg titetggetg gggtetgetg
                                                                       360
gegaaeggig agmicacggg tgigtgirig coctditcaa ggaggiccin igddoagieg
                                                                       420
rgggggctga decagagete tgrgtddday geagaatger taccgtgdtg eagtgegtga
                                                                       480
acytyteggt ggtgtctgeg qxqqtetgre gtaagctcta tgaccegctg tarcaccece
                                                                       540
gcatgttotg.cgcoggcgga gggcaagaco ngazggaeto etgcanoggt gartotgggg
                                                                       600
ggcccctgat rtgcaacggg twettgcagg gccttgtgte tttcggaaaa gccccytgtg
                                                                       660
gnamagttogg Cytyccagyt ytchacecca acctotycaa attcactyay tygatagaga
                                                                       720
andorgicca ggccagitae otoiggggac igggaecosa igaaatigac coccadatac
                                                                       780
atoritgogga aggaatteag gaatatoigt toccageeee toctoootea ggeecaggag
                                                                       840
tecaggeers cagessetes teceteasas caagggtaea gatseecags coctestess
                                                                       900
tragaccoay gagtoraged corcoagede etectorete agaccoagge gtocagodd
                                                                       96U
tectrentea gaccomaggag tecagaceer ecagocoute etecetraga coumaggagtt
                                                                      1020
gaggddddda acceetrete cttdagagte agaggtreaa gdddddaace ertegttood
                                                                      1080
cagarecaga ggtnnaggto coageceeto ttountuaga eccagnggto chatgreace
                                                                      114D
tagattttee etgnacacag tgedecettg tggnangttg acceaseett accagttggt
                                                                      1200
ttttcatttt thgtoccttt cccctagatc Cagazataaa gttteagaga ngngcaasaa
                                                                      1260
ರಜಜನವ
                                                                      1265
      <210> 174
      <211> 1459
      <212> DNA
```

<213> Homo sapien

<221> misc_feature <222> (1)...(1459)

ج220ء

Ban

900

<223> n - A,T,C or G

```
<400× 174
ggteageege acactgitte C0g0Agtgag tgeagagete chacaccate gggetgggee
                                                                        61)
tgcaragtct tgaggddgau camgagerag ggagddagat ggtggaggdd aybeteterg
                                                                       120
tacggracer agagtacaan agecoottge tegetaarga coloatgete atmaagttyg
                                                                       180
argaatuogt ghoogagtot gaeaccatoo ggagdatoag cattgottog dagtgoodta
                                                                       240
cogoggggaa etettgeete gillotggot gaggtetgot gacqaacagt gagcloacag
                                                                       300
gratgratet geneterres aggaggreet etgenesyre gegggggeng acceagagen
                                                                       360
otgogterca ggragaatgd ctaddgtgot gragtgegtg aadgtgtegeg tggtgtdtga
                                                                       420
ngaggtotigo antaagetet atgaereget gtaccaccec ancatgitict gegerggegg
                                                                       4B0
agggcoogae ragaaggant cotgeamogt gogagagggg aaaggggggggggggget
                                                                       54 D
cagggaaggg tggagaaggg ggagacagag acacacaggg cegcatggcg agatgcagag
                                                                       600
atggagagac acacagggag acagtgacaa ctagagagag aaactgagag aaacagagaa
                                                                       660
ataaacaceg gaataaagug augcaaugga egegagumar agusacagac atigggaggc
                                                                       720
agazzoaeze acacatagaa atguagetga cettecazea gustggggee tgaggguggt
                                                                       780
gacctocaco castagaama tertettata actittgact ceccaaasac etgactagaa
                                                                       840
Atagoutant gitgacgggg agnottacoa atagoatasa tagoogatti atgoatangt
                                                                       900
tttatgeatt catgetates etttgttgga attttttggt atttctaage teorcagtte
                                                                       960
gtotgtgaat ttttttaaat tgttgcaact otoetaaast ttltotgatg tgtttattga
                                                                      1020
aazaatccaa gtataagtgg auttgtgcat tcaaaccagg gttgttcaag ggtcaactgt
                                                                      1.DBO
gtacccagag gyammongtg acacagatic atagaggtgs aacacgaaga gaaacaggaa
                                                                      1140
aamteaagee tetacaaege ggdtgggeag ggtggdtdet gootgtaate ddegoectt
                                                                      1200
gggaggcgag gcagqcagat cacttgaggt aaggagttca agaccagcct ggccaaaatg
                                                                      1260
gtgaaateet gtetgtacta wasabboaaa agttagetgg abatggtgge aggeggetgt
                                                                      1326
aatoccagot acthgqqagg otgaggcagg agaaltgott gaatatggga ggcagaggtt
                                                                      1380
yakştyaştı gaşatcarac cactalactu caşcişşgçı aacaşaytaa gactıtçtet
                                                                      144D
саавааааа лааваааа
                                                                      1459
      <210× 175
      <211> 1167
      <212> DNA
      <200> Homo sapien
      <220×
      <221> misc_feature
      <222> (1)...(1167)
      <223> n = A, T, C or G
      <400> 175
gegrageest gyenggegge metggtnatg gammaegmat tgttetgete gggegtentg
                                                                        60
gtgcatccgc agtgggtgut gtdagoogca cactgtttod agazetecta cacuatoggg
                                                                       120
ctgggcctac acagtettga ggccgaccaa yagccaggga gccagatggt ggaggccagc
                                                                       180
eteteegtae ggcoccoaga gtacaacaga ctettgeteg etaacgaect catgeteate
                                                                      240
aagtiggacg aatregigte egaglethae accateraga geateageat igentegeag
                                                                      300
tgeectaceg egggwaarte ttgeetegth telegortggg gretgetgge gwarggraga
                                                                      360
atgectaceg tgetgeackg egtgamegtg teggtggtgt etgaggangt etgeagtamag
                                                                      420
ctotatgace egetgtaces ecocagosig ttetgegeeg goggagyges agaccagaag
                                                                      4 B U
garteetgaa koggitgautu tgggggeer atgatutgua acgggtaatt, guagageett
                                                                      540
gligiciticg gaeeagoene gligiggeesa citiggegige caqqigicta caceaacete
                                                                      600
tgcseattca ctgagtggat agagaaaacc gtccaqueca gttaactctg gggactggga
                                                                      66D
advocatgaza tigarcccce astacatoci goggazngas ticaggazta trigitocca
                                                                      720
generate detempere aggagineag geouveagee ceientegel emmaceaagg
                                                                      780
```

gracegated ecagecoote obcootexaga recaggagin dagaccerre agoccotent

contragers regarded generaters unboaseage aggagtores accesses

```
contentery teahadees gggtgeagge concessed tenteentes gagteagagg
                                                                        0.02
tecoagetee caaceteing ficecomages coagaggine aggingcyage operceince
                                                                       1020
teagacceag eggleeaatg cemeetagan intecetata exemptee cettigigges
                                                                       1080
nyttyaecoa acettarcag tiggittite attitigec cetiteccot agatecagaa
                                                                       1.140
ataaagtnta agagaagcyc mamaaaa
                                                                       1167
      <210> 176
      <211> 205
      <212> PRT
      <213> Homo sapien
      <230>
      <221> VARIANT
      4222> (1)...(205)
      <223> X&& - Any Amino Acid
      <400> 176
Met Glu Asn Glo Leo Phe Cys Ser Gly Val Leo Val His Pro Gln Trp
                                     10
Val Leu Ser Ala Ala His Lys Phe Glm Asn Ser Tyr Thr ILe Cly Leu
                                25
Gly Leu His Ser Leu Glu Ala Asp Glo Glu Pro Gly Ser Glo Met Val
                            40
Glu Ala Ser Leu Ser Val Arg His Pro Glu Tyr Asn Arg Leu Leu
                        55
Ala Asn Asp Leu Met Leu Ile Lye Leu Asp Giu Ser Val Ser Glu Ser
                    70
                                         75
Asp Thr Ile Arg Ser Ile Scr Ile Ala Ser Glo Cys I'ro Thr Ala Gly
                85
Asn Ser Cys Len Val Ser Gly Trp Gly Len Len Ala Asn Gly Arg Met
                                105
                                                     110
Pro Thr Val Leu His Cys Val Asm Val Ser Val Val Ser Glu Xaa Val
                            120
                                                 125
Cys Ser Lys Leu Tyr Asp Pro Leu Tyr His Pro Ser Met Phe Cys Ala
                        135
Gly Gly Gln Amp Gln Lys Amp Sor Cys Amn Gly Amp Sor Gly Gly
                    150
                                         155
Pro Leu Ile Cys Asn Gly Tyr Leu Gln Gly Leu Vel Ser Pha Gly Lys
                165
                                    170
Ala Pro Cys Gly Gln Leu Gly Val Pro Gly Val Tyr Thr Asn Leu Cys
                                185
Lys Phe Thr Glu Trp lle Glu Lys Thr Val Gln Xaa Ser
        195
                            200
      <210> 177
      <211× 1119
      <212> DNA
      <213> Homo sapien
      <400> 177
gegnachige ageodiggen ggeggebeig ghicalogues megaatigit cigetoggge
                                                                        БΩ
stoctggtge atergraging ggligctytom gergeacant gilltocagma etectmonic
                                                                       120
atrigggitgg gootgeacag tettgaggin geddadyage cagggaginga getggtggag
                                                                       180
goongestet cegtacggda cddagngtms amragacest tigdtegetma egacetcatig
                                                                       240
ctratcaagt theaceast optgtocgag totpacade teeggageat cageatteet
                                                                       BOOK
```

```
tegeagtger chaccacyyy gaactettge ctoptteetg getgggglot getggegaad
                                                                       360
gabbotytea tigocateca giccoment gigggaggot beynngigiga gaagottice
                                                                       420
caaccetgge agggtlighte extitegges sellevagtg caaggargle etgetgrate
                                                                       480
cloactyggt getractart gricactyca teaereggaa caetytyate aactayeega
                                                                       540
caccatagtt ctorgaagid agactateat gatladtgtg ttgactgtgd tgtetattgt
                                                                       600
ectaeccaty cogatytta gytgaaetta grytractty godtomacca tottogtato
                                                                       660
cagitatect cacigoally agaitteets officestyte agecattone ecotaattic
                                                                       720
tgacctacag aggigaggga teatalagot etteaaggat getggtaete enetgacaaa
                                                                       780
tteatttete engitgtagt gaaaggigeg contologaag entermaggg tgggtgigea
                                                                       840
ggtCaCtatg atgaatgtat gatcgtqttc ccattaccca aagcctttaa atccctcatq
                                                                       900
ctcagtacae cagggdeggt utageattie ticattiagt gtaigdigte cattcataga
                                                                       960
accacerowy gasteetgga tictetgest agitgagete eigeatgeig cetentingg
                                                                     1020
gaggtgaggg agagggccca tggttcaatg ggaldtgtgc agttgtaeca cattaggtgc
                                                                     1080
tlaataaaca gazgetgtga tgttaaaaaa zzaaasaaa
                                                                     1119
```

<210× 178

<211> 164

<212> PRT

<213> Homo gapien

<220>

<221> VARIANT

<222> (1) ... (164)

<223> Xee - Any Amino Acid

<400> 178

Met. Glu Asn Glu Leu Phe Cys Ser Gly Val Leu Vel His Pro Gln Trp 1 10 5 Val Leu Ser Ala Ala His Cys Phe Glm Asn Ser Tyr Thr Ile Gly Leu 25 Gly Leu His Ser Leu Glu Ala Asp Gln Glu Pro Gly Ser Gln Met Val 40 Glu Ala Ser Leu Ser Val Arg His Pro Glu Tyr Asn Arg Pro Leu Leu Ala Asn Asp Leu Met Leu Ile Lys Leu Asp Glu Ser Val Sor Glu Ser 75 Asp Thr lie Arg Ser lie Ser lie Ala Sor Gin Lys Pro Thr Ala Gly 90 85 Asn Ser Cys Leu Val Ser Cly Trp Gly Leu Leu Ala Asn Asp Ala Val 105 Ile Ala Ile Gin Sor Xwa Thr Val Gly Gly Trp Glu Cya Glu Lys Leu 120 Ser Gln Pro Trp Cln Gly Cys Thr Ilu Ser Ala Thr Scr Ser Ala Are 135 140 Thr Ser Cys Cys 11e Leu Thr Gly Cys Ser Leu Leu Leu Thr Ala Sor 150 155 Pro Gly Thr Leu

<210> 179

<211> 250

<212> DNA

<213> Homo sapien

44 DU> 179

```
utggagtger thgglgtttu mmgereetge aggaagemym atgemeette tgaggeacet.
                                                                          60
ccagolgood coggecgggg gatgogeggd tuggageard ottgoogge tgtgettget
                                                                         120
georggeret git.catetea gettitetgi eeniitgete eeggerageg ettetgetga
                                                                         180
aagttombat otggageetg atgtottaad gamtamaggt constgeted accegaamma
                                                                         240
<u>ಜಜನದವಾನಕಾಡಿದ</u>
                                                                         250
      <210> 180
      <211> 202
      <212> DNA
      <213 > Homo sapien
      <400> 180
actagercag tghgglggaa ttocattgtg begggccomm caraatggct accettaada
                                                                         Б0
teacceages congenering recogniques angetgeige teacquoagt atgatgetta
                                                                        120
etergetact eggaaactat tittargraa traatguarg criteright tarmaatgee
                                                                        180
tgatttaaaa aaaaaaaaa aa
                                                                        202
      <210> 181
      <211> 558
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_featurs
      <222> (1)...(558)
      <223> \pi = A_1 \pi_2 C or C
      <400> 181
tecyttigkt naggittikkg agacameeck agaeetwaan eigigteaea gaetteyngg
                                                                         60
aatgibbagg cagigetagi aatticytog taatgatick gitattarii technotici
                                                                        150
ttatteetet ttelltetgam gattaatgaa gttgaammit gaggtggeld aataraaeee
                                                                        180
ggtagtgtga tagtataagt atchaagtgo agatgaaagt gtgttatata tatccattca
                                                                        240
amattatgra agttegtamt tertragggt taartmamtt ortttaatet gotgttgaer
                                                                        300
ctantnight cottagetag sassabhitat amaraggant tightagitt gggaagcoan
                                                                        360
attgataata tictelgitu taaaagiigg goteledata aattattaag aaataiggaw
                                                                        420
tittattocc aggastatgg kgttcettit atgastatta oscrygatag awgtwigagt
                                                                        6 B D
auxayragtt thighwaata yetwaatate himtaaataa acaakeetti gaottattic
                                                                        540
саларвавав водрава
                                                                        558
      <210> 182
      <211> 479
      <212> DNA
      <213> Homo sapien
      <220>
      <221> ming_feature
      <222> (1)...(479)
      <2235 D = A,T,C or 6
      <400> 182
acagagattk gragatecta agacecerga rwtygettga teraacecta gettwitte
                                                                        60
agaggggass stggggccta gaagktacky mecatytagy togtycgmtg gcaccoctog
                                                                        120
esteacacag astroogagt agetgggant araggeacan agtnactgas googgeentg
                                                                       180
thwageable acquirecae chaceactic aneattethe atatytyaty techniques
                                                                       240
otmaggitaa actiticcomo composaagg caactingat assatcinag Agiscitica
                                                                       300
```

```
tactmiticia agreetette cagesteart kkgagteetm cytgggggtt gataggaant
                                                                        360
ntetettgge titeteaala aartetetat yeateteatg titaalitigg taegeafara
                                                                        42D
awigstgsca aasttaaaat gitcigutty martitaaaa aramaasaaa aaamaassa
                                                                        479
      <21,0> 183
      <2112 380
      <212> DNA
      <213> Homo sapien
      <400> 183
aggogggadu agaagetaaa gecaaageer aagaagagtg gezgtgeeag cautggtgee
                                                                         60
agtarragta craatascag tyccagtgro agtgoragea cragtggtgg cttragtgot
                                                                        220
ggtgccagcc tgacogccar trtcacattt gggrtchtcg ctggccttgg tggagctggt
                                                                        180
gecageacea giggeagete iggigeeigh gglitteteet acaagigigas tittagatat
                                                                        240
tgttaatcol goomgictii cicticaage cagggigcal coloagaaac clactcaaca
                                                                        OOE
cagcacteta ggcagccact atomatemat tgaagttgae actotgomtt armictatit
                                                                        36D
gccetttces addredance assa
                                                                        384
      <210> 1.84
      <211> 496
      <212> DNA
      <213> Nomo sapien
      <220>
      <221> misc_feature
      <222> (1)...(496)
      \langle 223 \rangle n = \hbar, T, C or C
      <400> 184
accessites gaccectese trataagega tumtetyynt coretation etcanogage
                                                                        60
agggagatug agtetatang etgaagmaat tiganeegat gggacaanag acctgetmag
                                                                        120
cocateetge teggttetee coagatgaca astactetag acacegaate accateasga
                                                                       180
aacgcttcak gytgeteatg acccageaac egrgecetgt cetrtgaggg tecettaaac
                                                                       240
tgatgtettt tetgecacct gttaceretm ggagaeteeg taaccadaet etteggaetg
                                                                       30D
tgagcoctga typotititig coagcoatae tottiggoat coagtototo gtggogattg
                                                                       36D
attatgettg tgtgaggcaa teatggtgge atemeceata aagggaacae atttgacttt
                                                                       420
titticicat attiaaatt actecmagaw tatiwmagaw waaatgawit gaaaaartsi
                                                                       480
tanaanaaa aaaaaa
                                                                       496
      <210> 185
      <211> 384
      <212> DNA
      <213> Homo sapien
      <400> 185
getggtager tatggegkgg eccaeggagg ggetentgag gecaeggrad agtganttee
                                                                        60
canguatery gegessegte turtacegue contectues gatetroggy cagatucece
                                                                       120
aggaggacat ggacgtggcc ctcatygage acagcaactg ytcghcggag coeggettet.
                                                                       180
gggeacacen toutygggee caggegggoo cetgegtete comptatgee aactygetgg
                                                                       240
Uggigotget coingidate ticotgeteg tggccaacat coigotggte aactigotea
                                                                       300
ttgccatgtt Cagttacaca ttcggcanng tacagggcan ungcgatetc tactungnag
                                                                       360
yegeagegtt acegecteat coqq
                                                                       384
      <210× 186
      <211.> 577
```

```
<212> DNA
       <213> Homo sepien
       <220>
       <221> @isc_feature
       <222> (1) ... (577)
      <223> n - A,T,C or G
       <400> 186
gagitagete etecacaace tigatgaggi egictgeagi ggeetelege tieatacege
                                                                         60
thecategic atautytagg titigecacea cyteetggea tettggggeg gentaatatt
                                                                        120
compgaaact ctrastcasg toacogtegs tgasscotgt gggctggtto tgtcttccgc
                                                                        180
teggigtgaa aggatetere agaaggagty otegatetic cecaeactit tgatyactit
                                                                        240
attgagtega tietgealgt edagenggag gitgladoag eintelgada gigaggidad
                                                                        300
cagecetate atycegitga megigeegaw gareaecgag cettgigigg gegkkgaagi
                                                                        360
Chexecoraga theigeatha ceagagager giggeaaaag acatigacaa artegeocag
                                                                        42D
giggasaaag amcameteet ggargigetn geegeteete gicmytiggi ggeagegeiw
                                                                        480
hectittgae aracaaacaa gutawaggea tittesgees reagaaanti giratratee
                                                                        540
augaintege acagementa tecagitiggg attamat
                                                                        577
      <210> 187
      <211> 534
      <212> DMA
      <213> Homo sapien
      <22D>
      <221> misc_feature
      <222> (1)...(534)
      <223> \pi = A.T.C or G
      <460> 187
ascatotton tytataatgo tytytaatat cyatooyato thytotyste agaatyostw
                                                                        6 D
actkggaaaa gmaacattaa agontggaca otggtattaa aattoacaat atgcaacaot
                                                                       120
Utanacagig igicaatoig ofocryynac thighcatca coagnologg aakaagggia
                                                                       180
tgeoctatto acacetytta aaagggegot aageattiit galteameat chtilitti
                                                                       240
gadacaagto ogaaaaaagd aaaagtaaac agttabyaat tigttagook attoacttto
                                                                       300
ttestgggse apagecatyt gatttaaaan gemaattges taatattgag ettygggage
                                                                       360
tgatatttga geggaagagt ageettteta etteaccaga cacaacteee ttteatattg
                                                                       420
ggatgttnac nawagtwaig iciciwadag aigggaight biigiggeaa ticigibeig
                                                                       4B0
aggatotoco agittattia coactigoso asgeaggogi tilottocto aggo
                                                                       534
      <210> 188
      <211> 761
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> {1}...(761)
      <223> \pi = A, T, C or G
      <400> 18B
agazaerragt atototnaaa araacctoto atarottgtg gacotaattt tgtgtgcgtg
                                                                        60
tightigting ogeahattat atagacange acatottitt tactitingta amagettate
                                                                       ט≤ב
cetetitiggt atotatatet gigaaagutt taatgatetg coatmaigte tiggggacet
                                                                       180
```

```
tigicticty tgiamaiggi actagagaaa acaccimini taigagicam ictagiingi
                                                                       240
tttattegae atgaaggaaa ttteecayatn accaeatna cammetetee etkgaekarg
                                                                       300
ggggaceaay amaaycaam cigamcataa raaacamba cciggigaga mriigcataa
                                                                       360
acagaaatwr ggtagtatat tgaathecag catcattasa regttettt wilctcoctt
                                                                       420
gcasasses tyteongact terrgitgeg tastgodaag tighthilit tainziaaaa
                                                                       480
ottgoertte attacatgit inakkhtyni giggigger kakkizitga aalgkiggak
                                                                       540
ctgactgala aagutgtaca aataagcagt gtgcctaaca agcaacacag taatgttgac
                                                                       600
atgottaatt cacaaatgot aalltoatta taaatgittg otmazatara chitqaacta
                                                                       660
tittitcigin ticccagage tgagaintia gattitaigi agiainaagi gamamanag
                                                                       720
gazzateata acattgaaga eesanamaaa alamaasaae a
                                                                       761
      <210> 189
      <211> 482
      <212> DNA
      <213> Homo eapien
      <220>
      <221> misc feature
      <222> (1)...(482)
      \langle 223 \rangle \pi = A, T, C or G
      <400> 189
ttttttttt tttgccgatn ctactattt attgcaggan qtgggggtgt atgcaccgca
                                                                        60
raccggggct @tnmgaagca agaaggaagg agggagggca cagccccttg otgagcaaca
                                                                       120
asycogosty etgesticis typotytoto etgytycagy cacatygyga gansttocco
                                                                       180
aaggragggg ccaccaytee aggggtggga atacaygggg tgggangtgt gentaagaag
                                                                       240
tyatkyyeau aggeracery gtacagaucu etrygeteet gacagytnga titegacuay
                                                                       300
gtcattgtgc cctgcccagg cacagegtan atctggaaaa gacagaatgc tutoctttc
                                                                       360
eastilinger insteadingua ingegeantit tocaunting actingators agraencing
                                                                       420
gttoggecea getomogic caamaantat teacconnet conaatiget igonggmene
                                                                       480
CC
                                                                       482
      <210> 190
      <211> 471
      <212> DNA
      <213> Homo Rapien
      <220>
      <221> Misc_feature
      <222> (1),...(471)
      <223> n = A.T.C or G
      <400> 190
ttttttttt ttttmaaaca gtttttcaca acassatta ttagaagaat agtggttttg
                                                                       60
absactitis catecagiga gabciaciat acaccatt acagcingga aigingteca
                                                                       120
eatgriigt casatgatac aatggaacca ticaatcita cacatgcacg azaqaacaag
                                                                       180
cgcttttgar atacaatgce caaaaaaaaa aggggggggg gaccaratgg attaamattt
                                                                       24 D
taagtactca texcatacat taagacacag ttotagtera gtcnaaaate agaactgcnb
                                                                      300
tgaasaattt catgiatgom miccaaccaa agaacutnut iggigalcat gamineteta
                                                                       360
ctacatomae ettgateatt godaggaaen amaagttmaa anchenengt acaamamaa
                                                                      420
tetgtaattn ambtemmeet eegtaengaa aaatntinni tatmeetee e
                                                                      471
      <210> 191
      <211> 402
```

<212> DNA

```
<213> Homo Rapien
                <220>
                <221> Misc feature
                <222> (1) . . . (402)
               <223> n = A,T,C or G
               <400> 191
  gaggyattga aggicigito tasigloggm cigiloagoc accaactota acaagtigut
                                                                                                                                                         60
  geotecact cacequotet asgrettita accompacyg tatortesta astagonoma
                                                                                                                                                      120
  atterreace agreacatet tetaggacet tirtggatte agriagiata ageretteca
                                                                                                                                                      180
  cttcctttgt taagacttca tctggtaaeg tcttmagttr. tgtmgamagg asttymattg
                                                                                                                                                      240
  ctogttetet ascastgice totoettgas giatitgget gaacaaccom ectasagtee
                                                                                                                                                      300
  etttgtgeat geattttaam tataettamt agggeattgk thometaggt tamattetge
                                                                                                                                                      360
  aagagtoato tgtetgeaaa agttgegtta gtatatetge ca
                                                                                                                                                      4()2
               <210> 192
               <211> 601
              <212> DNA
              <213> Homo sapien
              <220>
              <221> misc_feature
              <222> (1) ... [601]
              <223> D = A.T.C or G
              <400> 192
 gagetegget committee tigtelemmy geageacach intheagige categonaact
                                                                                                                                                       60
 quitetaccer acaigggage ageatgergi agnicatatea ggicaliteer igagicaque
                                                                                                                                                     120
 atgeytyttt gaytacegtg tgenagtge tggtgattel yazeaeacyt ceateregyt
                                                                                                                                                     180
 cttttgtgga aaaactggca cttktctgga actagcarga catcacttec maattcacco
                                                                                                                                                     240
 acgagacact, tgaaaggtgt aacaaaggga ytottgcatt. gctttttgtc cctcoggcac
                                                                                                                                                     300
 cagtiquess tactasoros otagottoro tecatosost tigigatoto tagotetoga
                                                                                                                                                    36 D
 taratetret gecagiacig aagaacitet teititgitt caaaagcare teitigige
                                                                                                                                                    420
 tgltngstos ggttcccatt tcccsgtcyg aatgttcaca tggcatattt warttccac
                                                                                                                                                    460
 asaacattgc gatttgagge trageascag canatretgt teeggeattg getgeaagag
                                                                                                                                                    540
 cobceatgra groupgreage geneageage gegeogtgag corcactage ageageagea
                                                                                                                                                    600
                                                                                                                                                    601
             <210> 193
              <211> 608
             <212> DNA
             <213> Homo sepien
             <220≥
             <221> misc_feature
             <222> (1,) ... (608)
             <223> n=\Lambda,T,C or G
             <400> 193
atacagecea natecracea egaagatgeg ettgttgaet gagaacetga tgeggteact
                                                                                                                                                     6 D
ggteregetg tagecomage garteteese utgetggaag eggttgatge tgcadteytt
                                                                                                                                                   120
ccceechces Acadwedcad ascondices the tentance to the first state of the contraction of th
                                                                                                                                                   180
tkaagtgeag gaagaggetg accaectings ggtosacrag gatgoodgas tgtgoggas
                                                                                                                                                   240
ctgragegaa actectegat gglcatyage gggaagegaa tgaggeecag ggeettgene
                                                                                                                                                   300
```

```
agaacettee geetgitete tiggogteace tgeagetget googetgaes eteggooteg
                                                                        360
gaccegogge Cawacogert tgaacagoog Cacoboungg atgooragty tytogreets
                                                                        420
vaggammgec accegegtgt coaqqtoaat gtoggtgaag cootoogogg gtralqqogt
                                                                        480
ctgcag0gtt tithtogaty ttctccagg0 acag0tygc cagctgcggt toatcqaaqa
                                                                        540
gtogogodig ogigagdagd ølgaaggegt igtoggelog dagblottet icaggaadte
                                                                        000
cacgcaar
                                                                        803
      <210> 194
      <211> 392
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_foature
      <222> (1) ... (392)
      <223> n = A, T, C \text{ or } G
      <400> 194
geacgeotyg accitycote goallytyot tyotygoagy gealacotty goaegoagyt
                                                                         €D
cragtergag cagcocooga cogetycege chyaagotaa gertycetet gycetteere
                                                                        120
trogocuta tyczgaece gtaglygysy czetytytt agagutasya ytganosoty
                                                                        180
tttgatttta ettgggaatt teetetgtta tatagetttt ceesatgeta attteesaac
                                                                        240
sacsacasca asatzacatg titgootgil aagtigizta aaagtaggig attoigtati
                                                                        300
tadagaaaat attactgtta catatactgc tigcaatttc tytatttatt gktnctstgg
                                                                        360
aaataaatat agttuttaaa ggttgtcant cc:
                                                                        392
      <210> 195
      <211 > 502
      <212> DBA
      <203> Homo sapien
      <220×
      <221> misc feature
      <222> (1)...(502)
      <223> n = A,T,C or G
      <400> 195
cesttkgagg gotkaggkyc cagttyccge otqyxaqaaa caggccagga yangtgcgtg
                                                                        60
cosagetgag gragatgitt coacagtgae coeragaged styggatata gtytotgaee
                                                                       120
cetencaagg aaagaccaes ttetggggac atgggetgga gggraggace tagaggeace
                                                                       180
augggangge cecattoogg ggstgttece egaggaggaa ggyangggge totgtqtqce
                                                                       240
cooranging absurgacet gagteetgag bicagacace cotteacety tatecceaca
                                                                       300
duantgeasg ctcaccagg terretetea gterretter steelertg amcygreart
                                                                       360
gscscacec cacceagage acquiacting contagggar titigiteran qartiqqonqu
                                                                       42D
gearcgtgga catctngtoc cagaaggggg cagaatctoc matagangga ctgarcmatt
                                                                       480
дстрапава азавалавав вы
                                                                       502
      <210> 196
      <211> 665
      <2122 DXA
      <213> Homo Rapien
      <220>
      <221> Misc_feature
      <222> (1)...(665)
```

<223> n = A, T, C or G

```
<400> 196
ggttacttgg thtcattgcc accacttagt ggatgloatt tagaaccatt ttgtetgete
                                                                          60
colotygany cottyceny ageggactit stantigtty gagantanot getganitti
                                                                         120
wagetgtttk gagttgatts geaccactge accescact teaatatgas akcyawttga
                                                                         180
ectwattrat totottgtga asagtalaac aatgaaastt ttgtteatac tgtantkate
                                                                         240
azgratgatg aaaagcaawa gatatatatt cttttattat gtraaattat gattgccatt
                                                                        300
attaatoggo maamigigga gighaigito tittemengh aatataigee tittigiaact
                                                                        360
tractiggtt attittatigt ammigarite camaattott mattiaagar amiggtatgt
                                                                        420
watatituti toattaatti ottiootkoi ttaogiwaat tilgaaaaga wigoalgatt
                                                                        480
tritgacaga aatogatott quigetgigg aagtagtiig acceacatoo Chaigagtii
                                                                        540
tecttagaat gratamaggt tgtagcccat chaacttraa agaaamaant gacracatac
                                                                        600
tttgcaatca ggctgesalg tggcatgctn ttcteattuc nactttatas ectagcaaan
                                                                        660
aagtg
                                                                        665
      <210> 197
       <211> 432
      <212> DNA
       <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(492)
      42235 \text{ n} = A, T, C \text{ or } G
      <400> 197
ttttnttttt Uttttttgc aggaaggatt doatttattg tggatgdatt ttcacaatat
                                                                         60
abgittattg gagegateca tiatoagiga aaagtateaa gigittataa nattitiagg
                                                                        120
aaggragatt cecagaacat getngtenge Utgcagtttt aretegtana gatnacagag
                                                                        180
sattatoytu naaccagtaa acneggaatt tacttttoaa aayattaaat cuaasutgaa
                                                                        240
cassatteta coctquaect testecatee mestattaga ataanagtee gesgtgatae
                                                                        300
attetettet gametttaga tittetagam amatatgiam tagtgatems gammagetet
                                                                        360
tgttcaasag tacaacnaay coatgttccc ttaccatagg ccttaattce adutttgatc
                                                                        42 D
cattleacte coatcacggg agteatqut acctgggace cttgtatttt gttcatnetq
                                                                       480
amentggett aa
                                                                       492
      <210> 198
      <211> 478
      <212> DNA
      <213> Homo sapien
      <220>
      <221> Misc_feature
      <222> (1),,,(478)
      <223> n = A,T,C or G
      <400> 198
tttnttttgn Atttcantct gtannaanta ttttcattat gtttattana acaatatnaa
                                                                        60
tgtntccarn areaetcein ttacninagi aageggcoon claratigie caecatorac
                                                                       120
tgagtetatt ttgaaaagga caagtttaam gtomacnoat attguogame atamoacatt
                                                                       180
tatacatggc thgattgate tttagcacag ceneeuctga gtgagttacc egemanaaat
                                                                       240
netalatate satengatti asgetacesa oragateeta tyytacatan catentatay
                                                                       300
gagttgtggc thtalgitta otgaaagtca algoaqttcc tgtacaaaga gatggccgta
                                                                       360
agraticitas taccictaci coatgotima gabicgiaca citatgitta catatginom
                                                                       420
```

```
gggtaagaat tgtgt(:eagt nammttatgg agaggt(:can gagasaaalt tgathcaa
                                                                        478
      <210> 199
      c211> 482
      <212> DNA
      <213> Homo sapien
      <220×
      <221> misc_festure
      <2225 {1}...(482}
      \langle 223 \rangle a = A,T,C or G
      <400> 199
agigactigh corceaseas ascondings tosagitigh generoses atcagnocia
                                                                         60
tgotagtter tgtcatctet togetartaa atgregaotg gaggggacca aaaaggggca
                                                                        120
treactions object that tiggsgroup capatrials occapitgs angulating
                                                                        180
agtgattdag tittectetar ggatgagaga etggetcaag aatatectea tgeagettta
                                                                        240
tgaagccmac totywaczog otggttatot nagztgagaa noegzgazat asegtonaga
                                                                        300
asatttacct ggangaaaag sggottingg ctggggacom teccattgas cottetetta
                                                                        360
anggaettta ageanamaet accaratgin ighngiater iggligeengg regilianig
                                                                        420
aachingaen meacceithit ggaatanant etigaengem teetgaarit geterteign
                                                                        480
ġa.
                                                                        482
      <210> 200
      <211> 270
      <212> DNA
      <213> Homo sapiem
      <220>
      <221> misc feature
      <222> {1}...(270)
      <223 n = A,T,C or G
      <400> 200
Cadocaras Escaactoca setassaces tenggacean sattetscom scagttesto
                                                                         60
cgactgcge0 qwcggcggcg gcgacegtcg cwggtgcagc gcgggcgcct ggggtcttgc
                                                                        120
Raggotgage tgacgccqca gaggtegtgt cacgtcccae gaecttgacg cegtegggga
                                                                        180
cagccggaac agageceggt gaangcggga ggeetegggg ageceetegg gaaqgggge
                                                                        240
ccgagagata cgcaggtgos ggtggccgcc
                                                                        270
      <210> 201
      <211> 419
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(419)
      <223> n = \Lambda, T, C or G
      <400> 201
tttttttttt ttttggaate tastgegage aeageaggte agezaeagt tlatttgea
                                                                        60
gotagezagg taacagggta gggeztggtt acatgtteag gtcaecttor titgingigg
                                                                       120
ttgaktggtt tgtctttatg ggggkggggt ggggtagggg aconcgaage andantaaca
                                                                       180
themstaggt grandcoor tetagaarch ggutachaaa getiggogow gitcacotog
                                                                       240
```

```
totgleacce teatiticit gacatessig truttagaag toaggatate tittagagag
                                                                    300
tocartgint olygogygag attaggytti cityccoana tocaanaaa alkoumentga
                                                                    360
aaaagtigge igatmomogi acngaatedo ganggostan tictoatani oggiggoda
                                                                    419
      <210> 202
      <211> 509
      <212> DNA
      <213> Homo mapien
      <220>
      <221> misc_feature
      <222> (1)...(509)
      <223> n = A,T,C or G
      <400× 202
6Q
tggcartisa tccattttta tttcassatg tctacaaant ttnaatnonc cattatacng
                                                                    120
9thattttne assatetass nottatteas stotnagees santeettae nessatunas
                                                                    1B0
tarnenrasa astramant ataentnint thragonaar tingtherat aastramaa
                                                                    240
eathtatacy gotggtgttt homasytacz attatettam cactyczase abbittomaa
                                                                    300
ggaactaaaa taaaaaaaaa cactneegca aaggttmaag ggaacaacaa attentiita
                                                                    360
cascandnou mattatassa atcatatute maatettagg ggantatata etteaumong
                                                                    420
ggatettaac itthactnes oftigittat tittitanaa ceatiginti gggeeraaca
                                                                    480
raatggmaat nooneenene tggaetagt
                                                                    509
      <210> 203
      <211> 583
      <212> DMA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (2)...(583)
      <223> D = A,T,C Or G
      <400> 203
ttttttttt tttttttga coccctctt atanaaaca agttaccatt ttatttlact
                                                                     60
tadacatatt tattitataa tiggiattag ataltdaama ggcagciitt aaaatcaaac
                                                                    120
taaatggaaa Ctgoottaga tacataattC ttaggaatta gottaaaatc tgootaaagt
                                                                    180
gadaatette tetagetett tigaetgisa attitigaet etigiasaac alecaastie
                                                                    240
attitititg totttsaast tatctaatot ticcattit tocctation asgicaatit
                                                                    300
gettetetag ceteatitee tagetettat etactattag taagtggett titteetaaa
                                                                   360
agggeaaca ggmagagana atggmadaca aaacaaacat tttmtattca tatttotacc
                                                                    420
tacgttasta asatageatt tigigasgno agotoamaag aaggottaga tortittatg
                                                                    480
tocattitag teactaaang atatemanag tgecagaatg cannaggitt gigascutti
                                                                   540
atteamage taktataaga tatttemest deteatett etg
                                                                    583
      <210> 204
      <211> 589
      <212> UNA
      <213> Homo sapien
      <22D>
      <221> misc_Ceature
      <222> (1) ... (589)
```

300

360

420

480

```
<223> n = A,T,L' or G
      <400> 204
ttttttttttt Etttttlitt tttttnete Etethtilt tiganaatga ggatogaqti
                                                                        60
tilicacticto tagataggge atgangaaee eteatettic cagetttama ataaceatea
                                                                       120
astrictiat griataical attituagit asactaatgu qipaciqqet tatrictee
                                                                       180
tgaaggaant otgitootto tictoatica tutegitata toaagteein coligoatat
                                                                       240
tgagaggtit ticticicle titecacata tatticcatg tgaattigta tceaecctit
                                                                       300
attitteatge annetagann atmatgtatt ettitgenta agagaagaga neantataga
                                                                       360
cattacassa ctgctcsss( tgtttgttsa gnttstccat tataattagt Unggcaggag
                                                                       420
Chaalacaan teacatttac ngacnagcan teatamaanct gaagteeeng timaatatee
                                                                       480
assetsatta aaggaacall titugootgg gialaallug otaattoact teacumqost
                                                                       54 D
thattnages typetteen typetattett contageors acsonatgs
                                                                       589
      <210> 205
      545 م211ء
      <212> DNA
      <213> Homo mapien
      <220>
      <221> misc_feature
      <222> (1)...(545)
      <223> n = A,T,C or G
      <400> 205
thittintilt ittittoagt aatmatosga acamemitta intittatatt tammattost.
                                                                        60
agaaaagtgc cttscattta ataaagttt gtttctcaaa gcgatcagag gaattagata
                                                                       120
tngtcttgaa caccaatatt aatttgagga aaatacacca aaatacatta agtgaattat
                                                                       160
ttaagatoat agagottyta agigaaaaga taaaattiga cotoagaaac totgaqoatt
                                                                       240
assmalecae tattagemen tabuttarta tygaettett getttaattt tytgatgaat
                                                                       300
atguagete actagrazac caacacatto traagratac attacttagt gatagattot
                                                                       360
tatgtactit gctanatnac giggziatga gtigacaagt tictcittct tcaatcitt
                                                                       420
aaggggcnga ngaaatgagg aagaaaagaa aaggattacg catautgtto tttotaungg
                                                                       480
aaggattaga tatgttbccb bigccaatat taaaaaaata ataaigtbia ctaccagiga
                                                                       54 D
68000
                                                                       545
      <210× 206
      <211> 487
      <212 > DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(487)
      <223> n = A,T,C or 8
      <400° 206
titttttttt tittitagid asgirtoina tittiattai aastaaagid tiggioalti
                                                                       ďΰ
catttattag (totycaact tacatattta aattamagaa angtthitag megactgina
                                                                       120
cantitates atglesggig (Cattatige glanstetat tectecases glagging)
                                                                       180
coeffeices assanceat geancegone cattagette attitutating tagetnates
                                                                      240
```

detgetgeaa aegetaalt0 totteteeat emecalging atatigtgia latgingag

ttgginagaa tyeateanea atetnaeaut emacageaag algaayetag gentgggeti

teggigaaaa tagacigigi eigietgaai caaalgutei gacetaicci cygiggeaag

aactobloga Booyottoot caaaggongo tyocacattt gtggcototo tegcacttgl

```
ttomman
                                                                         487
       <210> 207
       <2115 332
       <212> DNA
       <213> Homo sapion
       <220>
       <221> misc_feature
       <222> (1)...(332)
       <223> \pi = A,T,C or G
       <400> 207
tgaattggct assegantge attittanse chapmanete ttatthetht cettesses
                                                                         60
Uacataquat taaatrecaa atootattta aagacetgan aquttgagaa ggtoactact
                                                                        120
gcatttatag gacctuctgg tggttctgct gttacntttg aantctgaca atccttgana
                                                                        180
atcuttgcat quagoggagg tassaggtat tggattttca cagaggaana acsuagogca
                                                                        240
graatgaagg ggcceggett motgagettg tocectggmg ggetcatggg tgggacatgg
                                                                        300
assageaggi ageotaggee etggggagee ca
                                                                        332
       <210> 208
       <211> 524
       <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(524)
      <223> D = A,T,C or G
      <400> 208
agggrgtggt gcggagggcg ttactgtttt gtdtcagtaa caataaatad amaaagactg
                                                                        60
guighter ggreecater eaccargang tigattiete tigigtgeng agtgactgat
                                                                       120
tttaaaggac alggayettg teacaatgte acaatgtere agtgtgaagg geacacteac
                                                                       180
todogegiga tiracatita godacemara atagetoatg agreeatari totanataci
                                                                       240
tttggcagaa tectnitiga aacttgcaga tgataactaa gatccaaget atttcccaae
                                                                       300
gtaaatagaa gtgggtcata atattaatta cotgttcaca tuagottoca tttacaagto
                                                                       360
atgagercag acadtyacat caaactaagd doadttagae terteaccad dagtetgtee
                                                                       420
tgtcatcage caggaggotg tcaccttger caaattctca coagtcaatc atctatccae
                                                                       480
maaccattac ctgatccact terggtaatg caccacettg gtga
                                                                       524
      <210> 209
      <211> 159
      <212> DNA
      <213> Homo sapien
      <400> 209
gggtgaggaa atccagagtt gocatggaga aaattccagt gtcagcattc tl.gctccttg
                                                                        60
tggccctctc ctacactrtg gccagagata cracagtcaa acctqgagrc aasaaggaca
                                                                       120
canaggacte tegacocana etgenecaga contenua
                                                                       159
      <210> 210
      <211> 256
      <212> DNA
      <213> Homo sapien
```

```
<220×
      <221> misc feature
      <2225 (1)...(256)
      <223> n = A,T,C or G
      <400> 210
actocotggo agacaaaggu agaggagaga gototgitag ttotgtgttg tigaactgoo
                                                                          60
actionattic titiccactig gactettaca tgccantiga gggacteuts gazaaacqta
                                                                         120
tggggagatt ttenccaett tengthtgta aatggggaga ctggggcagg cgggzgagat
                                                                         180
ttquagggtg namatgggan ggctggtttg ttanmigaac agggaeming gaggtaggem
                                                                         240
ccaggatget eaetca
                                                                         256
      <210> 211
      <211> 264
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(264)
      <223> n = h.T.C or G
      <400> 211
acattgitti tillgagatam agcattgaga gagolotout taacgigaca camiggaagg
                                                                         60
actogaacae atacceacat citiguicte agggataatt ticogatmaa gietigotgi
                                                                        120
atatteaage acatatgata tatattatte agttematgt tiptageeta gattaaggaga
                                                                         180
ggggegatad attengolag aggactgase gamatactel aginggamma cogalalage
                                                                         240
amammaggag caamtgagaa gcct
                                                                        264
      <210> 212
      <211> 328
      <212> DNA
      <213> Romo sapien
      <220×
      <221> misc_feature
      <222> (1)...(328)
      \langle 223 \rangle n = h_iT<sub>i</sub>C or G
      <400> 212
accessable consigeres stattingert tentiaties canattent gattgicass
                                                                         60
gyatttaatg tigtoloego bigygoacti cagitagged diaaggalgo cegodgqoaq
                                                                        120
gittatelat goageaacaa tattoaagog ogmoaoragg itatugaact igooogogag
                                                                        180
tinaatites ticccatiga cityggatee fiatcalcay ceagagagat tyxaaxitta
                                                                        240
cocctached tottlactor otgganaggy ceagtggtgg tagotataag ettggccaca
                                                                        300
ttttttttc cfttattect ttgtcaga
                                                                        328
      <210> 213
      <211> 250
      <212> DNA
      <213> Homo sapi n
      <220>
      <221> misc feature
```

```
<222> (1)...(250)
                <223> r_1 = A_1T_2C or G
               <400> 213
 activities adaged activities at a section of the se
                                                                                                                                                                     60
 tasagnathg closetgasg ggatageagt gartgreagg agggamagta agcomagget
                                                                                                                                                                   120
 Cattatgoca aagganatat acattteaat tetecamet tetterteat tecaagagtt
                                                                                                                                                                  180
 ttcsatattt gcatyaacct gctgateene catgitaana sacaaatate totcinacct
                                                                                                                                                                  240
 teteateggt
                                                                                                                                                                  250
               <210> 214
               <211> 444
               <212> DNA
               <2135 Homo sapiem
               <220>
               <221> misc_feature
               <222> {1},..(444)
               <223> n = A,T,C or G
               <400> 214
accompants castgetigam tattinggett cattatters agailtettin attnicaming
                                                                                                                                                                   60
gatttaatgt tetotoaget teggcactto agttaggacc tampgaterc agcongrage
                                                                                                                                                                 120
titatatatg cagcaacaat attosagogo gacaacaggt tattgaactt georgocagt
                                                                                                                                                                 180
tgaatticat toccuttgae tigggetoot tatcatcago cunagagatt gaeauttac
                                                                                                                                                                 240
cootacgast stitacists tagasagge cagiggings agetalaags iiggecaset
                                                                                                                                                                 300
tttttttter titatteett tgtcagagat gogatteate calatyctan asaccaacag
                                                                                                                                                                 36D
agigactitt acameatice istaganmit gigaataaa cettacetat agiigecatt
                                                                                                                                                                 420
actitgetet cectaatata ecte
                                                                                                                                                                 444
              <210> 215
              <211> 366
              <212> DNA
              <213> Homo sapien
              <220>
              <221> misc feature
              <2225 (1)...(366)
              <223> n = A,T,C or G
              <400> 215
actiatgage agagegarat atchaagigt anacigaata mameigaatt ciccocagit
                                                                                                                                                                  60
twampeatig cicacigady ggatagaagt gactgecagg agggadwgin agecaagget
                                                                                                                                                                120
cattatgoda aagganatat acatttoaat totogaaact tottootoat tooaagagtt
                                                                                                                                                                180
ttraatattt geatgmacet getgmtaage cutgttgaga aacaaatute tetetgaeet
                                                                                                                                                                240
totoatoggi aageagaggo totaggeaac atggacosta gegaaneasa aacttagtaa
                                                                                                                                                                300
tecaagnigt Uttotacact ghaaddaggt ticcaacdaa ggiggaaatd iddiatacii
                                                                                                                                                                360
ggtgcc
                                                                                                                                                                366
             <210> 216
             <211> 260
             <212: DNA
             <213≻ Homo sapien
             <220>
```

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<221> misc_feature
      <222> (1)...(260)
      <223> n = \Lambda, T, C or G
      <400> 216
ctgtataaac aqaaotccac tgcangaggg agggccgggc caggagaatc torgcttgtc
                                                                          60
Campacaggg gertaaggag ggtutuuaca etgetnotaa gugutottoe attittetat
                                                                         120
taataaaaag thnadaaggo etetteteaa cuttiteee tinggetgga aaatttaaaa
                                                                         180
at Casanatt terthaagtt nicaagetat estatses; ninteetgas saageacet
                                                                        240
mattchtcct tccctccttt
                                                                         260
      <210> 217
      <211> 262
      <212> DNA
      <213> Homo sapien
      <220>
      <2215 misc_fcature
      <222> (1)...(262)
      <223> n = A,T,C or G
      <400 < 217
acctarging plangittan aasightaba atticaggaa naggaacgon talaatigba
                                                                         6 U
tottgootat aattitichat tittaataagg aaatagcaaa tiggggtggg gggaatgtag
                                                                        320
ggratictac agittyagea aaatgcaatt aaatgtggaa ggacagcact gammaatttt
                                                                        180
atgastasto tgtatgatta tetototo gagtagattt steattagee acttacecta
                                                                        240
stateettea tgettgtaam gt
                                                                        262
      <210> 218
      <211> 205
      <212> DNA
      c213 > Romo sapien
     <220×
      <221> misc_feature
      <222> {1}...(205}
      \langle 223 \rangle n = A,T,C or G
      <400> 238
accaaggigg tycattaceg gaaniggato aangacarca ingiggood coerigagoa
                                                                         БÜ
occeptes etecetting taginament ggaacettyy ammigaersg geomagaere
                                                                        120
aggootcood agitotacig accittigios tranginina ngiocagygi igotaggaaa
                                                                        180
anabatrage agacacaggt qtaaa
                                                                        205
      c2105 219
      <211> 114
      <212> DNA
      <213> Homo sapieu
      c400> 219
tactifitti teteaghaac aataumtaem aamagantge tigtifiteeg generatoem
                                                                        GD
accangaagt lighttotot titgtgtgnage gtgactgatt thaasggace tigga
                                                                        134
      :210> 220
      <211> 93
```

```
<212> DNA
      <213> Homo Bapien
      <400> 220
actagocago acaaaayyea gggtagootg aattyettto tgotottlad atttettta
                                                                         60
adataageat ttagtgetea gtecotactg agt
                                                                         93
      <210> 221
      <2115 167
      <212> DWA
      <2135 Home sapien
      <22D>
      <221> misc feature
      <222> (1)...(167)
      \langle 223 \rangle n = A,T,C or G
      <400> 221
artangigea ggigegeacu autattigie gabatteeet teateilgga tieeaigagg
                                                                        60
tottttgood ageetgigge intactgiag taagitteig otgatgagga geeagnatge
                                                                       120
cecceactar ettenutgau getececana aatumouwa cetetgt
                                                                       167
      <210> 222
      <211> 351
      <212> DWA
      <213> Home sapish
      <400> 222
egggratggt goggagggg gtactgacct cattagtagg aggetycatt ctggcacccc
                                                                        60
gitetteace igicccocaa idottaaaag gccatactyo ataaagicaa caacagataa
                                                                       120
atgittgctg mattaaagga tggalgaaaa amattamiam igaattittg catamiccaa
                                                                       180
ttttctcttt tatatttcta quagangttt ctttgagect attagatccc gggautcttt
                                                                       240
taggtgagga tyattagaga gettgtaggu tgettttaca tatatetgge atatttgagt
                                                                       300
ctcgtatena aacaatagat tggtuanggt ggtattattg tattgataag t
                                                                       353
      <210> 223
      :217> 383
      <212> DNA
      <213> Komo sapien
      <220>
      <221> misc_feature
      <222> {1}...(383}
      <223> n - A,T,C or G
      <400> 223
adaacasaca aacaaaaaaa acaattette atteagaaaa attatettag ggaetgatat
                                                                       60
tggtaattat ggtcaattta atwrtrttkt ggggcatttc cttacattgt cttgacaaga
                                                                       120
ttaasatgto tgtgccaaaa ttttgtattt tatttggaga cttottatca ausgtaatgo
                                                                       18 D
tgooxaagga agtotaagga attaqtagtg ttoonmtcac ttgtttggag tgtgctatto
                                                                       240
taaaagattt Ugatttootg gaatgacaat tatutttaa otttaggtggg ggaaanagtt
                                                                       300
ataggaceae agtetteact tetgatactt gtaaattaat ettttattge anttgttttg
                                                                       360
accattaagc tatatgttta aaa
                                                                       383
```

<210> 224

```
<211> 320
            <212> DMA
            <213> Homo sapien
            c400> 224
coortyaagg ettetigita gaasalagin eagitaceac caateggaac aecastaaga
                                                                                                                                          60
assagtitgt gecaliging tagggagigt gincoverta riceconter assassant
                                                                                                                                        120
ggatacatgg ttabaggata raagggGaat attttatcet atgttotaba agagaaggaa
                                                                                                                                        180
gagaaaatan tantitiitiin aastigaaagn ooltaaaggt giittigatan tigaaggadaa
                                                                                                                                        240
addigings of the steet of the same of the 
                                                                                                                                        300
tttaractom gostlytyav
                                                                                                                                        320
           <21U> 225
           <211> 1219
           c2125 DNA
           <213> Homo sapien
           <400> 225
gaggaetgea greegeacte guageeetgg caggeggeae tggteatgga aaargaattg
                                                                                                                                          60
thotgetogg gestectagt gestecades taggetacts cascoscae etattecas
                                                                                                                                        120
auctectaca ccateggget ggguotgeae agtettgagg cegaceaaga gecagggage
                                                                                                                                        180
capatggtgg aggerageet etergtargg daccoagagt acaacagace ettgrteget
                                                                                                                                        240
aacgacetea tgeteateaa gttggaegna teegtgtoog agtetgaeac cateeggage
                                                                                                                                        300
atragratty oftogolyty coctacegry gagaletrit gentratic typetaggage
                                                                                                                                       360
ctgctgqcga acggcagaat gcctaccqtg ctgcagtgcg tgaacgtgtc ggtggtqtct
                                                                                                                                        420
gaggaggtet gcagtaaget etatgaeeeg etgtaeeaee eeageatgit etgegeegge
                                                                                                                                        480
ggagggckky wccagaagga etechgckke ggtgaetetg gggggeeeet gatchgeaae
                                                                                                                                       540
sygtactige agggeetigt grettiegga aaagecoogt giggeeaagt tygegigeea
                                                                                                                                        600
ggtgtctece ccaccetetg casettcect gagtggatag egeaaaccgt ccaggccagt
                                                                                                                                       660
teactotggg gactgggeat coatquantt gercectaan techterige gganggaatt
                                                                                                                                       720
caggaatate tittudoago contectodo tungqeecas gaqteenggo coccagodo
                                                                                                                                       780
tectedetea aaccaagggt Acagateere agecesteet costeagaes raggagtera
                                                                                                                                       840
gaccreecag conditions of ragacros ggagtorage controller tragacrossy
                                                                                                                                       30U
gestoueque cerceager etoutucete agerceaggg steeaggeen cueaccete
                                                                                                                                       960
eteceteaga Ctcagaggte caagreecea acceteett ceccagacce agaggtecag
                                                                                                                                      1020
ghocoagues sterierete agacosagog giocaatgos austagacio tocolgiaca
                                                                                                                                      1080
castgeeree figliggeacy tigarceaac citacoagit getituteat tititgicco
                                                                                                                                      1140
tttuccectay atcragaast aaagtetaag agaagegeea mmaaasaaa aaaaaaaaa
                                                                                                                                      1.200
8688 SEEEGEEE
                                                                                                                                      1214
           <210> 226
           <211> 119
            <212> DNA
            <213> Homo sapies
           <400> 226
ecccagtate tgcagggaga cggaadcoon tgtgacagco cactccacca gggttcccaa
                                                                                                                                         60
agearcigg: CCaytoates testicated tigadagtigge astastoard ataaccagt
                                                                                                                                       119
           <210> 227
           <211> 818
           <212> DWA
           <213> Nomo sapiso
           <4UD> 227
```

```
acaattoata gggargacra atgaggadag ggamtgmmer cggdtotooc ccmgdootga
                                                                        6.0
tttttgctac atatggggl@ cettttcatt ctttgcakea acactgggth ttetgagaac
                                                                       120
acggacggtt, ottagcacaa tttgtgeest otgtgtaraa ccgggotttg cagggqagst
                                                                       工器口
aatttteete etetggagga aaggtggtga tigacaggea gggagaeagt gacaaggeta
                                                                       240
gagaaagcce cycloggeet teletgaecc aggatggaac ggcagaccce tgaaaacgaa
                                                                       300
gottyterce tircastesg comettetgs gazeneckt etwartiret Actggsaaag
                                                                       360
agggeetheel daggageagt resagagbbt temmagatam egtgadamet areatetagn
                                                                       420
ggamagggtg caccotoago ayagamgeeg agagottaad tetggtegtt bouagagaea
                                                                       480
acctgotggc tytottggga tgcggggagg ctttgagagg cqadtadooc atgaacttot
                                                                       540
goomtocart ggacatgees orgaggacar tgggcttcam cartgagttg tomtgagagg
                                                                       600
gacaggoton gocorcaage eggergaggy cageaaceae tetectoce trretonege
                                                                       ៥៩៧
abaycontto coacasator agacostaco atgasgosau gagacocaas caytttggot
                                                                       720
casgaggata tempgacigi ciragcotge citigggcig acacoatgoz cacacacmmg
                                                                       780
gtocactict aggitticas cotagategg agtogtet
                                                                       B18
      <210> 228
      «211» 744
      <212> DNA
      <213> Homo sapien
      <400> 228
actggagada otgttgaart tgalcaagad ccagaccado (caggtrico ttogtgggat
                                                                        60
gtcatgacgt tigacalacc titggaacga gcclcctcot tggaagatgg amgaccgtgt
                                                                      120
tegtggccga cotggcctet cetggcctgt ttettaagat geggagteac attteaatgg
                                                                      380
tagquaaaagt ggcttcgtaa aatagaagag cagtcactgt ggaactacca aatggcgaga
                                                                      240
tgctcggtg: acattggggt gctttgggst aamagattta tgagccaact attchctggc
                                                                      300
accagattet aggecagitt gittemetga agettitede memgeagice accietgeag
                                                                      360
gotggcaget geatggottg coggtggott tgtggcaaga tracectgay atrgatgggt
                                                                      92D
gagaaggeta ggatgettgt ctagtgttet tagetgtcar gttggeteet tecaqgttgg
                                                                     . 480
compargity tiggecacte cetterman cacaggeger etectggtga cagtgacceg
                                                                      540
cogtogtate cottegence thomageagt conagttate cattleagt tiggogtite
                                                                      60D
ttottttrgt taatgttoot otgtgttgtc agctgtotto atttcctggg ctaagcagca
                                                                      660
ttgggagetg tygaccagag atccactest tazgaaccag tggcyaaaga cactttsttt
                                                                      720
Cttcactctg aagtagctgg tggt
                                                                      744
      <210> 229
      <211> 300
      <212> DNA
      <213> Homo sapien
      <400> 229
egagtetggg ttttgtetat aaagtttgat cocteetttt eteatoceaa testgtgaac
                                                                       60
cattacacat cgazataasa gaaaqgtggc agacttgccc aacgccaggc tgacatgtgc
                                                                      120
tgcagggttg ttgtttttta attattattg ttagmaacgt caccacagt coctgttaat
                                                                      180
tigialgina cagecaacic Leagaaggir clattilles accigcagag galocagiri
                                                                      240
cartaggete etestace testactiga gretecgens gratgggtge eractigadat
                                                                      300
      <210> 230
      <211> 301
      <212> DNA
      <213> Houm sapien
      <400> 230
Caguagaara aataceaata tgaagagtgo eeagatutca taaaatotel gutgaggaat
                                                                       60
gagegacagt teaaggagga gaagettgea gageagetea ageaagetga ggageteagg
                                                                      120
```

```
vastatsang teetggttem cactemagges cabagotgm eccagtteng gaagangtta
                                                                       180
egggaaggga gagatgcold obtoteattg aatgagcatd todaggoest esteactory
                                                                       240
gatyaauugy acaagteeea ggggeaggac Cludaagaaa cagacetegg ceguqaecae
                                                                       300
                                                                       301
      <210> 231
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 231
gcaagcacgc tggc688tct Ctqtcaggtc agctccageg aayccattag tcatftlagc
                                                                        60
Cayyaactcc aagtccacat cottggcaac toyygacttg egcaggitag cottgaggat
                                                                       120
ggcaacacgg gacttctcat caggaagtgg gatgtagatg agctgateaa gacggccagg
                                                                       180
totywagaty gowggateax tgatgtcagg coyattagta cogcommica tymmement
                                                                       240
tttttttgtg gacatgccat ccatttotgt caggatotgg ttgatgacto ggtcagcago
                                                                       300
¢
                                                                       301
      <210> 232
      <211> 301
      -222- DNA
      <213> Homo sapien
      <400> 232
agtaggtatt tegtgagaag tidaxcacca aaactggaad atagttetee tteaagtgtt
                                                                      - 60
ggcgacagcg ggyottootg attriggast stascittgt gtasattaac agccacctat
                                                                       120
agaagagtee atetgetgtg aaggagagae agagaactet gegtteegte gteetgtees
                                                                       180
cgtgdlgtad daaytgotgg tgdcagcctg ttaddtgttd tcactgaaaa tdtggctaat
                                                                       240
gototigtgt atcacttotg attolgacem tomatcaatc amiggootms agoactgact
                                                                       300
g
                                                                       301
      <210> 233
      <211> 301
      c212> DNA
      <213 > Homo sapien
      <400> 233
atgactgact teccaguasg getetetaag gggtaagtag gaggaterae aggatttgag
                                                                        60
atgotaaggo cocagagate gtttgatcca accetettat tttcagaggg gmaaatgggg
                                                                       120
ectagaagth acegagcate tagetggtge getggcacco etggceteae acagacteco
                                                                       180
yagtagetgg gertacagge acacagteac tyaagcagge cetgttagea attetatgeg
                                                                       240
tacaaattaa catgagatya gtagagactt tattgagawa gcaagagaaa atcctatcaa
                                                                       3 U Q
                                                                       301
      <210× 234
      <211> 301
      <212> DNA
      <213> Homo sapien
agytoctada catogagort rateratget tyátatgaat ttaeasetta caagossaga
                                                                       €D
cattitatic atcatgates titotitigt ticitotitit ogitticite titticitit
                                                                       120
tematticay cascatacti cicaaftict teaggattia assictigas ggattgatet
                                                                       180
egectratga cagcaagute aatgittitg cracebact gasccartic caggaguges
                                                                       240
ttgatesees gettaatggt cagatestes, getteaatgg ettegglesgl atagttette
                                                                       300
```

```
t
                                                                        301
       <210> 235
       <211> 283
       <212> DNA
       <213> Homo sapien
       <400> 235
tggggctgtg catcaggcgg gtttgagaaa tattcaattc tcagcagaag ccagaatttg
                                                                        60
aattooctoa tottitaggg aatcatttac caggittigga gaggattoxg acagotoagg
                                                                       120
tgctttcact aatgtototg aacttotgto cototttgtt outggatagt commtagata
                                                                       180
atgitatett tgaactgate eteataggag agaatataag aantetgagt gatateaaca
                                                                       240
ttagggatte asugsaatat tagatttaag etcacactgg tea
                                                                       283
      <210> 236
      <211> 301
      <212> DNA
      4213> Homo sapien
      <400> 236
aggicctcum demacigeet gaagemeggt taamatiggg magaagiata gigragemia
                                                                        δD
antactttta satcgatcay atttccctas cocacatgca atcttcttca ccagaagagg
                                                                       120
toggagoago atouttaata coaagoagau tgogtaatag ataaatacaa tggtatabag
                                                                       GBI
tysytagacy gottoatyay tacagogtan tytygtatog taatotygac togggotyta
                                                                       240
aagcat.cgtg taccagtcag aaagcatcam tactcgacat gamcgastat aamgaacacc
                                                                       300
                                                                       301
      <210> 237
      <211> 301
      <212> DNA
      <213> Homo mapien
      <400> 237
cagtggtagt ggtggtggac gtggcgttgg tcgtggtgcc ttttttggtg cccgtcacaa
                                                                       60
acteaattt tottegetee titteggeet titeeaatti oteratetea attitetggg
                                                                      120
cottggctaa tgcctcatag taggagtcct cagaccagec atggggatca aacatateet
                                                                      180
ttgggtagtt ggtgccaagd togtcaatgg caragaatgg atcagettet egtaaateta
                                                                      240
gggttccgaa attotttctt cotttggata atgtagttca tatccattcc ctcotttatc
                                                                      300
                                                                      305 .
      <210> 238
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 238
gggcaggttt tttttttttt ttttttgatg gtgcagaccc ttgcttatt tgtctgactt
                                                                       20
gttcacagtt cagreecttg ctcagamae raacgggcca getmaggaga ygaggaggca
                                                                      120
ertigagact teeggagieg aggeteteea geceateaat calliteige
                                                                      180
accecetgee tggg&agcag etceetgggg ggtgggaatg ggtgactaga aggg&tttem
                                                                      240
gtgtgggacc cagggtctgt tcctcacagt aggaggtgga agggatgact aatttcttta
                                                                      300
                                                                      301
      c210> 239
      <211> 239
```

```
<212> DNA
        <2135 Homo sapien
        <400> 239
  atsagcaget agggametet ttmtttagtm mightotame atmmaagtie acatametge
  ttotgtcass contgatect gagotttgtg acaaccoagn aatmactang aganggonaa
                                                                          €0
  catastacet tagagateaa gazzeattta cacageteaa cegtetaaaz atageteaac
                                                                         120
  atteagecag tgagtagagt gtgaatgera geataeacag tatacaggte etteaggga
                                                                         180
                                                                        239
        <210> 240
        <211> 300
        <212> DNA
        <213> Homo Bapien
       <400> 240
 ggtortastg aagcagcage ttccaeattt teacgcaggt ttacggtgat actgtortt
                                                                         60
 gggatetgcc ctcuagtgga accttttaag gaagaagtgg gcccaagcta agttccacat
                                                                        120
 getgggtgag ccagalgaet telgtteert ygteaettte tleaatgggg cgaatggggg
 ctgccaggtt tttaazatca tgcttcatct tgaagcarac ggtcacttca ccctcctcac
                                                                        TBO
 getgtgggtg tartttgatg aakktarrea etttgttggr etttrtgaag etataatgte
                                                                        240
                                                                        300
       <210× 241
       <211> 301
       <212> DWA
       <213> Homo sapien
       <400> 241
 gasgtetggt getgaggtet etgggetagg aksaggagtt etgtggaget ggaageeaga
                                                                        60
 cetettigga ggaameteca geogetatet tegtetetet gogggaatge aacomggete
Ctortccatg tattggssam rtgcsmartg gactraactg gaaggmagtg ctgctgccag
                                                                       120
                                                                       180
tgtgmagaar cagcotgagg tgacagaaac ggaagcaaac mygaacagco agtottttct
tortertent greatacggr cretoroug careettest tgreagggge craeaaggga
                                                                       240
                                                                       300
3
                                                                       301
       <210> 242
       <211> 301
       <212> DNA
      <213> Homo sapien
      <400> 242
cognagatect gagatacane castenetet attracata netttrates centechatt
                                                                       60
tgtggcattt cctcattttc tacattgtag aatcangagt ytaaataaat gtatatggat
                                                                       120
gtottcasga atatateatt cotttttcac togaacceat teaaaatata agtoaagaat
                                                                       180
ctteatatca edaaatatat caaggeeact ggenggcage ataagtacca tantttegta
                                                                       240
taagtaccca aagitttata aatcaaaago ootaatgata accatttta gaattcaato
                                                                      300
A
                                                                      301
      <210> 243
      <2115 302
      <212> DNA
      <213> Homo sapien
      <400> 243
aggtaagtee cagittqaag eteaaaagat etggtatgag cataggetea tegaegaeat
                                                                       ΦO
daraccess accutasser codsaddaea crroterad accrarass scratastad
                                                                      120
```

```
tgacgtgcag tcggactcty tggcccaagg gtætggctct ctcggcatga tgaccagcgt
                                                                         180
 gotygtttgt ccagatggca agadagtaga agcagagget goocacggga etgtaaceeg
                                                                         240
 teactacege atgitecage auggacagge gaegiecace auteceatig ettecatitt
                                                                         COE
                                                                         301
       <210> 244
       <2115 300
       <212> DNA
       <213> Homo sapien
       <400> 240
 getggttige aagaatgasa tgwatgatte,tacagetagg aettaacett gaaatggasa
                                                                         60
 gtcatgcaat creattiqua ggateiqtet gigcacaige etciqingag ageageatic
                                                                        120
 Cragggacet tygaracagt tyacactgta egytgrttgc terccaagae acatectaaa
                                                                        180
 aggigiteta alggigaada egicticett ettlatigee entrettali talgigadea
                                                                        240
actigttigte tittigtgtat ettittaaa etgiaaagti eaatigtgaa aatgaatate
                                                                        300
       <210: 245
       <211> 301
       <212> DNA
       <213> Homo sapien
       <400> 245
gtotgagtat ttemmatgtt attgammatte toccommence atgttmgaes agaemgaggt
                                                                         60
tatatactta gataeaaaat gaggtgeatt actatecatt gaaateatge tettagaatt
                                                                        120
eaggccagga gatattgtca ttaatgtara cttcaggaca ctagagtata gcagccctat
                                                                        180
gttttcaaag agcagagatg caattaaata tigittagca tcaaaaaggc cactcaatac
                                                                       240
agctantees atgassgare testrerss agcastrett tetrattree seagtittes
                                                                       300
9
                                                                       301
      <210> 248
      <211 > 301
      <212> DWA
      <213> Homo sapien
      <400> 246
ggtctgteet araatgeetg ettettgaaa gaagteggea etttetagaa tagetaaata
                                                                        60
acctgggctt attttaaaga actatttgta gctcagattg gttttcctat ggctaaaata
                                                                       120
agtocticit gigaaaatta aataaaacag ttaattraaa gcctigatat aigitaccac
                                                                       180
taacaatcat actaaatata ttttgaagta caaagtttga catgototaa agtgacaacc
                                                                       240
Canalytyte ttaczzazaca cyttectaar aagytatyet ttaczetace aatyczyzza
                                                                       300
                                                                       301
      <210> 247
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 247
aggtdottig gcagggctca tggatdagag cicalactgg agggaaaggc attecgggta
                                                                       60
gertaagaga gegaetggeg grageacaac caaggaagge maggttgttt cececaegec
                                                                       12 D
Statectata theagataca acacacate eteatagata caagateace catacactae
                                                                       180
ccttgatgat caaggttggg gctcaagtgg attaagggag gcaagttctg ggttccttgc
                                                                      240
cttttcaaar catgaagtca ggototgtat contenttt cotaactgat attCtaacta
                                                                      300
                                                                      301
```

```
<210> 24B
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 248
aggteetigg agaigeeath tragorgaag pactetietw ticggaagta eacceicact
                                                                         60
attaggaaga ttöttagggg taattittgt gaggaaggag azctagccaa cttaagaatt
                                                                        120
acaggaagsa agtggtttgg aagacageca magamataaa agcagactam metgeatcag
                                                                        180
giacattoca gootgitggr eartocataa aaacatttoa gattitaato cogaattiag
                                                                        24 D
ctaatgagac tggattttig tittttatgt tgtgtgtcgc agagctaaaa actcagttco
                                                                        300
¢
                                                                        301
      <210> 249
      <211> 301
      <212 > DNA
      <213> Homo sapien
      <100> 249
etcoagagga agencetggt getgaactag gettgeootg etgtgaactt gemettggag
                                                                         60
contrarget getetteter organizate reacegaint organizate entrengent
                                                                       120
cdagggagac acageagtga ctragagetg gtogcacact gtgcrtccct cotcacegrc
                                                                       180
ratrytaaty aathetilis aaaattaatt craccateet ticagattet ggatggaaag
                                                                       240
actgaatctt tgactcagas ttgtttgctg aaaagautga tgtgactttc ttagtcattt
                                                                       300
a
                                                                       301
      <210× 250
      <211 > 301
      <212> DNA
      <213> Home sapien
      <400> 250
ggtetgtgae aaggaettge aggetytggg aggeaagtga coottaacac tacarttete
                                                                        60
Cttatetta tiggetigat aaacataatt attietaaca etagetiatt teeagitgee
                                                                       120
cataagraca tcaqttxcttt tctctpgrtg gaatagtaaa ct&aagtatg gtacatctac
                                                                       180
ctamaagact actatgtgga ataatacala Ctaatgaagt attacatgat ttamagacta
                                                                       24 D
reataaaacc eaacatgott ataarattaa gaaaaacaat mangatacat gattgaaacc
                                                                       300
a
                                                                       301
      <210> 251
      <211> 301
      c212> DNA
      <213 > Homo sapien
      <400> 251
grogaggtor taratthggo coagititodo optgeatect chocagggod octgerteat
                                                                        60
agacaadotu atagageata ggagaactgg ttgccctggg ggeaggggga ctgtctggat
                                                                       120
ggcaggggtC CtCladdaty cractytrac tgrcaggada tycttrtgag cagtacact
                                                                       180
cattgggate aatgaaaagc ttc68gatAt cttcaggete actctcttga aggeceggaa
                                                                       240
CCtClggAgg ggggcagtgg aatrocagct cCAggargga trotgtogaa aagatatoot
                                                                       300
                                                                       301
```

<210> 252 <211> 301

60

```
<212> DNA
        <213> Homo mapien
        <400× 252
  geaaccaate artetgitte argigaetti taleaccata raattigigg catticcies
  ttttetacat tgtagaatca agagtgtaaa taaatgtata tegatgtett caagaatata
  trattonttt ticactagga accoattraa aatataagto aagaatetta atatoaacaa
                                                                         120
  atatatraag caaartggaa ggcagaataa rtaccataat ttagtataag tacccaaagt
                                                                         180
  tttatsaate aaaageeeta atgatazees tttttagaat tesateatea etgtagaate
                                                                         240
                                                                         300
                                                                         3 D 2
        <210× 253
        <211> 301
        <212> DMA
       <213> Homo sapien
       <400> 253
 fterrtaaga agatgitatt tigitgqqit tigiteeree teeaterega ticirgtace
 caactaadoo assadaataa agadoosatg tgctgcgttc tgadosatea ctccttogct
                                                                         60
 typicigati gitticagao citaaaatni aaactigitt chcaagciit aatccaigig
                                                                        120
 gatttttttt cttagagaac cecadaacat daaaggagca agtoggactg aatacotgtt
                                                                        180
 Cocataging coacaggyta ticcicaeat titciccata ggaaaatget tettercaag
                                                                        24 D
                                                                        300
                                                                        301
       <210> 254
       <211> 301
       <212> DNA
       <213> Homo sapien
       <400> 254
edergedent freenrigge adsådadess åbecsæsåda darecæsæra cedesedada
sactigacca atterettga agegggtggg ttasaccetg taaatgggaa caaaateer;
                                                                        60
crasatetet tratettace reggiggert congecteta gaattittig gitgadacaa
                                                                       120
gaaraaaata aagetttgga etttteaagg ttgettaaca ggtaetgama gaetggeete
                                                                       180
actiaeacty agcceggaaa agctgcaget trattaetyg gtgtgttagt gtgcegtgcc
                                                                       240
                                                                       300
                                                                       301
      <210> 255
      <211> 302
      <212> DNA
      <213> Homo sapian
      <400> 255
agottttict ttittitt ttittttt ticattamaa aatagigoto titatiataa
nttactgade tytttetttt etgaarstaa armtaaatat gigenaagtt tysettygat
                                                                       60
tgggattttg ttgagttott caagcatoto otagtacoot caagggootg agtagggggg
                                                                      120
aggeaaning actigaggtg gestetttat assaasees agtgattgeg geagattgta
                                                                      180
marattatta maaaacaaga macamacama ammatagaga maaaaaccac cccaacacac
                                                                      240
                                                                      300
                                                                      302
      <210> 256
      <2125 301
      <212> DNA
     <213> Homo sapies
```

```
د220ء
      <221> misc_feature
      <222> (1)...(301)
      \langle 223 \rangle n = A,T,C or G
      <400> 256
gttccagaaa acattgaagg tggcttccca aagtrtaact agggatarcc cctctagort
                                                                           бO
AGGACCOTOC ECCCACACO TCARTCCACO AGACCATOCA EAATGCACOC AGALAGGCCC
                                                                          120
acceccaaea grotogecar ottgageare ragttatger caggacagae teatetetat
                                                                          180
aggrassiag cigriggras actggcatta cotggttigt ggggatgggg gggcaagtgt
                                                                          240
gtggcctctc ggcctggtta gcaagaacat tragggtagg cotaagttan togtgttagt
                                                                         300
                                                                         301
      <210≥ 257
      <2115 301
      <212> DNA
      <213> Romo sapien
      <400> 257
gttgtggagg aactctggct tgctcattax gtcctactga ttttcactat cocctgeatt
                                                                          60
tecccactia tittigiett teactatege aggeettaga agaggietae elgecterag
                                                                         120
tottacctag toragictac cocclegegt tagaatggcc atcotgaagt gaaaagtaat
                                                                         180
gtcacatted toocttoagt gattlettgt ageagtgoom atccctgaah goomcoaga
                                                                         240
tottaatett cacatettta atettatete titgaeteet etttacaceg gagaaggete
                                                                         300
                                                                         301
      <210> 258
      <211> 301
      <212> DNA
      <213> Komo sapien
      <220>
      <221> misc_feature
      <222> [1]...(301)
      <223> n=A,T,C or G
      <400> 25B
cagragtagt agatgoogta tgccagracg cccagcactc ccaggateng caccagcacc
                                                                          60
A9999500ag ccaccaggeg cagaagcaag ataaacagta ggctcaagac cagagecacc
                                                                         120
recagggeaa caagaateea ataccaggae Egggeaaaat etteaaagat ettaacamtq
                                                                         180
atgleteggg cattgagget gtcaataana egetgateer etgetgtatg gtggtgteat
                                                                        240
tggtgatccc tgggagcgcc ggtggagtaa cgttggtcoa tggaaagcag cgcccacaac
                                                                        300
E
                                                                        301
      <210> 259
      <211> 301
      <212> DNA
      <213> Homo sapien
      <220>
      <221> mist feature
      <222> {1}...(301)
      <223> \pi = A, \hat{\tau}, \hat{c} or \hat{c}
      <400> 259
```

```
tcatatatgo maacaaatgo mgactangoo tomggcagaq actaaaggac abotottggg
                                                                          БO
 grotectgaa gigatiigga cocciyoggg cagacaccia agloggaato ccagigggaa
                                                                         120
 grasagccat auggaagcco aggattectt gtgatcagga agtgggccag gaaggtctgt
                                                                         180
 todagetcae atotoatetg catgoagoae ggacogyatg cgcccaetgg gtettggett
                                                                         240
 ccetaccate tictcaagea gigicettgi igagecatti gcalcetigg ctecaggigg
                                                                         300
 C
                                                                         301
       <210> 260
       <211> 301
       <212> DNA
       <213> Homo sapien
       <400> 260
ttttttttttt Coctaaggaa aaagaaggaa caagtotoat maaaccamat aagcaatggt
                                                                         60
aaggigtett aactigaass agaltaggag teactggitt acaagitata attgaatgss
                                                                        120
agaartgtaa Cageracagt tggerattic atgeraatgg cageaaacaa caggattaac
                                                                        180
tagggraada tasataaytg tgtggaagee cegataagtg ettaatasac agaetgatte
                                                                        240
actgagacat cagtaretge coppgegges gotegageeg aattetgeeg atatecatea
                                                                        300
\Box
                                                                        301
       <210> 261
       <211> 301
       <212> DNA
       <213> Homo sapien
       <400> 261
aastattuga graaatootg taactaatgt gtotooataa aaggotttga actoagtgaa
                                                                        60
totgetteca todacgatte tageaatgae eleteggaea toaaagetee tettaaggtt
                                                                        120
agraccanct attenataca attenteago aggaeatana ggotottong anggotoeat.
                                                                        180
ggtgacatro eatitoitoi geteatitag ettoctoara ecottocteg traegigaag
                                                                        240
ggcatgatga tcatccaaag cccagtggto acttactoca gactttctgc aatgaagatc
                                                                       300
                                                                       301
      <210> 262
      <211, 301
      <212> DNA
      <213> Homo sapien
      <400> 262
gaggagagcc tgttackçca tttgtaagca cagaatactc caggagtatt tgtwattgtc
                                                                        Бđ
tgtgagette ttgeegeaag teteteagaa atttamaaag atgemaatee etgagtemen
                                                                       120
cctagactic ctaaaccaga tectotoggg ctggaacctg gcactotgra titgraatga
                                                                       180
gggetttete gtgeacacet aattttgtge atetttgeed taaateetgg attagtgeed
                                                                       240
Catcattace cocacattae aatgagatag attomgagea gatactetco ageaaqaat
                                                                       300
C
                                                                       301
      <210> 263
      <211> 301
      <212> DNA
      <213> Homo sapien
      <22D>
      <221> misc_feature
      <222> (1)...(301)
      <223> n = A,T,C or G
```

<400> 263

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tttagcttgt ggtaaatgac tracaasact gattttaaaa tcaagttaat gigsattitg
                                                                          БО
 assattacta ctteatecta attearasta acastggeat taaggtttga cttgagttgg
                                                                         120
 ttettagtat tatttatggt aaataggete ttaccaettg caaataactg geescateat
                                                                         180
 taatgaetga etteedagta aggeteteta aggggtaagt angaggatee acaggatttg
                                                                         240
 agatgeteay greecagaga tegittgate caaccetett attiteagag gggaaaatgg
                                                                         300
                                                                         301
       <210> 264
       <211> 301
       <212> DNA
       <213> Homo sapien
       <400> 264
 adagacgita decoacteta ctaccactig iggaactete adagggtaad igarddaer
                                                                         6 D
 aatgaatgac telaaaadca atattiocal ttaatggitt glagacdata aaddaaacaag
                                                                        120
 gragatagat Clagaatigt accatticas gaasaccata scattigaca gargagasag
                                                                        180
 etraaltata gatgeaaugt tataaetaaa etaetatagu agtaaagaaa tacattteee
                                                                        240
 accettesta tamatteset atettggett gaggeactee acadaatgta teaegtgest
                                                                        OOE
                                                                        30].
       <210> 265
       <211> 301
       <212> DNA
       <213> Homo sapien
       <400> 265
tgrccaagtt atgtgtakgt gtatccgcar cragaggtaa Auctacacty tratctttgt
                                                                         60
cttcttgtga cgcagtattt cttctctggg gagaagccgg gaagtcttct cctggctcta
                                                                        120
catattette gaagtetete atcaecttt gttecattte ttteattet teaggaggga
                                                                        180
titteagttt gicaacatgi tetelaacaa caettgeesa titetgiaaa gaatreaaag
                                                                        240
cagtoreagg cittgacatg trascasora gratactag agtatortto agagatacgg
                                                                       300
C
                                                                       301
      <230> 266
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 266
taccotttge rettectede atcoaggeea tetgegaate taratgggte etectatteg
                                                                        БÇ
acaccagate actettenet etarceacag gettgetatg ageaagagae acaaccteet
                                                                       120
ctottotgtg ttocagette ttttoctgtt ottoccacco ettaagttet attectgggg
                                                                       180
atagagacae caataceest ascetetete etaageetee ttataaceea gggtgeacag
                                                                       34 D
cacagacter tgacaactgg taaggreaat gaartgggag etcacagrtg grtgtgcetg
                                                                       300
                                                                       301
      <210> 267
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 267
aaagagcaca ggccagctca gcctgccrtg gccatctaga ctcagcctgg ctccatgggg
                                                                        60
```

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gttrtcagtg ctgagtccat coaggaaaag ctcacctaga ccttctgagg ctgaatcttc
                                                                         120
 atcorcacag geagettetg agageetgat attoctagee ttgatggtet ggagraaage
                                                                        180
 ctcattctga ttcctctcct tctttcttt caagttggct ttcctcacat Ccctctgttc
                                                                        240
 aattogotto agottgtotg cittagocot cattrocaga agottottot cittagoato
                                                                        300
 t
                                                                        301
       <210> 268
       <211> 301
       <212> DNA
       <213> Homo sapien
       <400> 268
aatgtetese teasetaett ceragertse egtggeetaa ttetgggayt tttettetta
                                                                         бΠ
gatettggga gagetggtte ttetkaggag aaggaggaag gacagatgta actttggate
                                                                        120
togaagagga agtotaatgg aagtaattag tommoggter tigittagae toliggaata
                                                                        180
tgrtgggtgg ctragtgage cottttggag aaagcaagta ttattettaa gyagtaarea
                                                                        240
cht.ccattg ttctactttc taccatcatc aattgtatat Catgtattct ttggagaact
                                                                        300
á
                                                                        301
      <210> 269
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 269
taxcaatata cactagetat ettittaaet gircateatt agraceaaig aagaiteaai
                                                                        G٥
assattacct ttattcacac atctcaasac sattctgons attcttagte angtttaact
                                                                       120
atagecacag accttaeata ttcacattgt tttctatgtc tactgamaat aagttcacta
                                                                       140
cttttctgga tatttttac asaatcttat tasaattcct ggtattatca ccccaatta
                                                                       240
tacagtages caaccacett stgtagtttt tacatgatag etetgtagaa gthteseate
                                                                       300
                                                                       301
      <210> 270
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 270
cattgaagag cittigegaa acateagaac acaagigeti ataaaattaa tiaageetta
                                                                       60
racaagaata Catatteett ttotttetaa ggagttaaac atagatgtag etgatgtgga
                                                                      120
gagettgetg gtgeagtgea tattggatma cactattemt ggeeganttg atcamptem
                                                                      180
craartcott gaactggate atcagaagka gggtggtgca rgatatactg cartagataa
                                                                      240
tggaccaacc aactamatte tetemccagg etgeatemet amentggett amengamme
                                                                      30D
                                                                      301
      <210> 271
      <211> 301
      <212 > DNA
      <213> Nomo sapien
      <220»
     <221> misc_teature
     <222> (1)...(301)
     <223> n = A,T,C or G
```

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<400> 271
assaggitet estangaten acoutttaan tosutatitg stagmacutt ettectatt
                                                                         бD
titatagete atertraggg tigetattea giteatgett ceetigetgt terigatera
                                                                        120
gastigcast cacticates secigiatic setecatic tetatesegt gggtecaagg
                                                                        180
tgaaccacag agccacagea cacctette cettogtgae tocetteacc ecatganggt
                                                                        240
tetetecte agatganeae tgateatgeq copacattrt gggttttata gaagragtee
                                                                        300
                                                                        301
      <210> 272
      <211> 301
      <212> DNA
      <213> Homo sapieл
      <400> 272
talattgcts agocacaget ascaccastc asstggsacs satescipte ticastgte
                                                                        КD
ttatcagama accamatgas ortgement teatmatmer tammeatger statttagam
                                                                       120
tocastaatt Contratgat gagraagasa Rattettige gearconton igeaterara
                                                                       180
gcatcitete caacaaatat aacettgagt ggettettgt aatetatgtt etttgttte
                                                                       240
ctmaggactt Coattgrate tectarasta tittetetae gesecactmg sattmageag
                                                                       300
a
                                                                       301
      <210> 273
      <211> 301
      <212> DNA
      <213: Homo mapien
      <22D>
      <221> misc_feature
      <222> (1)...(301)
      <223> n = A,T,C or G
      <400> 273
acatgigigt aigigtatet tigggaaaan aanaagacat otigittayi attittigg
                                                                       60
agagangets spacatogat aatenewtaa titsetayta tyaetttaat etgaetygaa
                                                                       120
gaaccgtcta axaataaaat ttaccatgtc dtatattcct tatagtatgc ttatttcacc
                                                                       180
thythrotyt coagagagag tatcagtgac ananatttma gggtgaamac etymattggt
                                                                      240
gggactinty titaengagm accetgereg agegeeting makenganti engosamane
                                                                      300
t.
                                                                      301
      <210> 274
      <211> 301
      <212> DNA
      <213> Nomo sapien
      <220>
      <221> misc_feature
      <222> (1)...(301)
      <223> n = A,T,C or 0
      <400> 274
cttatatact ctttctcaga ggcamaagag gagatgggta atgtagacaa ttctttgagg
                                                                       60
aacagtaaat gattattaga gagaangaat ggaccaagga gacagaaatt aacttgtaaa
                                                                      12 D
tgattetett tygaatetga atgagateaa gaggeeaget ttagettgtg gaaaagteea
                                                                      180
totaggraig ghigeatter egictletti icegeagiag ataatgaggt aaccgaagge
                                                                      240
auttgtgctt cttttgatae geogettict tggtcatate aggaaettee aganaeegte
                                                                      300
```

```
C
                                                                         301
       <210> 275
       <211> 301
       <212> DNA
       <213> Romo sapien
       <220×
       <221> misc_feature
       <222> {1}...[301]
       <223> n = A,T,C or G
       <400> 275
 toggtgtcag cagcacgtgg cattgaacat tgcaatgtgg agccdaaarc acagaasatg
                                                                         60
gggtgaaatt gggCaacttt rtatCaactt atgttggCza ttttgccacc aacagtaagc
                                                                        120
tggcccttct aetaaagaa eettgaaagg tttctcacta aecegoatta egtagtggag
                                                                        180
teaagagaet ccckggeetr agegtaeutg ceegggegge egetegaage egaattetge
                                                                        240
agetatecat cacarteger encerteen catecorra gaageneraa ttegreetat
                                                                        300
                                                                        301
       <210> 276
       <211> 301
       <212> DMA
       <213> Homo sapien
       <400× 276
tgtaracatz ctcsatamet amatgacuge attgtggtet tattartate ctgattacat
                                                                        60
ttatratgto actictaatt agaammigta toraaamgem saarageaga tatacammat
                                                                       120
tanagagaca gaagatagac actaacagat anggcaactt atacattgag antresaatc
                                                                       180
caatacatit aaarattigg genatgaggg ggacaaatgg aagccagatc aaattigtgt
                                                                       240
aanactatte agtaugitte cettgettea tgietgagaa ggeteteett chaigggat
                                                                       300
9
                                                                       301
      <210× 277
      <2115 301
      <212> DNA
      <213> Homo sapien
      <220×
      <221> misc_ftature
      <222> (1)...(301)
      <223> R = A,T,C or G
      <400> 277
trigitgaig teagrattit attactigeg tratgagige traceiggga aditetaeag
                                                                       60
atacagagga cttggaggaa gcagagcaac tqaatttaat ttaaaagaag gaaaacattg
                                                                       120
gaateatgge actestgata ettteccona tenacaetet enatgeeten ecetegteet
                                                                       180
Cacratagig gggagattaa agiggccacg gattigcctt angigtgcag tgcgitctga
                                                                      240
gttenetgte gattacatet gaccagtete ettttteega agteenteeg tecaatettg
                                                                      300
                                                                      301
      <210> 278
      <211> 301
      <212> DNA
      <213> Homo sapien
```

```
<220×
      <221> misc_feature
      <222> (1)...(301)
      <223> n - A, T, C or G
      <400> 278
taccactaca ctccagcctg ggcadcagag caagacctgt ctcaaagcat aaaatggaat
                                                                         60
aacatatcaa atgaaacagg gaaaatgaag Ctgacaattt atggaagcca gggcttgtca
                                                                        120
cagtetetae tgttattatg Cattacetgg gaatttatat aageeettaa taataatgee
                                                                        380
aatgaacato toatgigigo toacaatgit diggoactat tataagigot toacaggitt
                                                                        240
tatgtgttct tcgtaacttt atggantagg tactcggccg cgaacacgct aagccgaatt
                                                                        300
                                                                        301
      <210> 279
      <211> 301
      <212> ONA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(301)
      <223> n = A,T,C or G
      <400> 279
abagcaggsa tgacaaagct tgcttttctg gtatgttcta ggtgtattgt gacttttact
                                                                        бО
gttätättää ttgccaatat aagkaaacat agattatata tgtakagtgt ttczcaaagc
                                                                       120
ttagacettt accttecage caceceaeag tgettgatar tteagagtea greattggtt
                                                                       180
atacatgtet agitcomang cacatangct agammamam atatiticing ggagometac
                                                                       240
ratetgilli racatgaeat godacacaca tagaactoca acatozatti cattgoacag
                                                                       300
                                                                       301
      <210> 280
      <211> 301
      <212> DNA
      <213> Nomo sapien
      <400> 280
gotactggag tittectecc etgtgaaaac graactactg tigggagtga attgaggatg
                                                                        60
tagaaaggtg gtgga&cca& attgtggtca atgg&&&tag gagaatatgg ttctcactct
                                                                       120
tgagaaaaaa acctaagatt agcccaggta gttgcctgta acttcagttt ttctgcctgg
                                                                       180
gtttgatata gtttagggtt ggggttagat taagatctaa attacatcag gacaangaga
                                                                       240
cagactatta actocacago taattaagga ggtatgttoo atgittatit gttaaagcag
                                                                       300
                                                                       3 D1
      <210> 281
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 281
aggincaaga aggggaatgg gaaagacig rigotgtggo attgitcaac tiggatatto
                                                                        Бΰ
gccgagcaat ccaaatcctg aatgaagggg catcttctga aaaaggagat ctgaatctca
                                                                      120
atgtggtage aatggettta tegggttata eggatgagaa gaacteeett tggagagaaa
                                                                      180
totorage actorgates capetabata accortatt grotorcary tregeattre
                                                                      240
```

```
tgacangiga aacaggatci tacgatggag tiligtatga maacaaagti gcagtacric
                                                                        300
                                                                        301
      <210> 282
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> ZBZ
caggiactae aganttaana tactgacaag caagtagitt ettggegige acgaattgem
                                                                         бQ
teragaaree aaaaattaag aaattesaaa agacattttg tgggcacetg etageacaga
                                                                        120
agcocaçãas casaseceas seasaaceat setaseetta caseteasee tscacasaas
                                                                        180
cgcagaagra aagcccaggc agaaccatgc taaccttaca gctragcctg cacagaagcg
                                                                        240
Chanageana greeaggeag eacatgetha cettacaget caacetgrae agaagearag
                                                                        30D
                                                                        301
      <210> 283
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 283
atctgtatac ggcagacaaa ctttatarag tgtagagagg tgagcgaaaag gatgcaaaag
                                                                        60
cactitigade actitateat estatectes tigazzease easigtesta tigatactos
                                                                       120
gigratetre agacatagia aggggtiget eigaccaate aggigateat titticiate
                                                                       180
actioncagy tittatgraa aastiitgii aastirtata atggigatat geatoittia
                                                                       240
ggaaacatat acattittää maatotatti taigteegan oigacagacg sattigetti
                                                                       3 D D
g
                                                                       301
      <210> 284
      <211> 301
      <2125 DNA
      <213> Homo sapien
      <400> 284
Caggtacasa acgetattea gtggctcaga atttgaacat ttgtggtett tatttacttt
                                                                        бО
gettegtgtg tgggcaaage aacatettee etaaatatat attaccaaga acagesagaa
                                                                       730
gragattagg titttgacaa aacaaacagg ccaasagggg gctgacctgg agcagagcat
                                                                       180
ggtgagaggc aaggcatgag agggcaagtt tgttgtggac agatctgtgc ctactttatt
                                                                       240
actggogtaa aagaddocdd dgitcatiga igirgaaggd taixiacagi gbiqqaaati
                                                                       300
                                                                       301
      <210> 285
      <211> 301
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> |1}...(301)
      <223> n - A,T,C or G
      <4DD> 285
acateaccat gateggater cocacecatt atacgttgta tytttacata astactette
                                                                        60
astgaccatt agigttiam maassatact gasaatteet telgesteed materelase
                                                                       120
```

```
Caggamages satgetattt acagmeetge aagmeeteed trassenmaa ctatttutgg
                                                                        180
attaaatatg totgacttot titgaggida cacgactagg cammigetat timegatetg
                                                                        240
Caaaagetgt tigaagagir aaageceeca igigaacacg attictggae cetgtaacag
                                                                        300
                                                                        301
      <210> 286
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 286
taccactgck trockgortg ggtgackqxg tgagactccg totccasakk azactttgct
                                                                        ಕ೮
tgtatattat tittgcctta cagiggatca tictagingg aaagyacagi aagattitt
                                                                       120
atcassatgt growtgeesg tasgagatyt totattett terestitet teeccaccos
                                                                       180
damataaget accatatage trataagtet caamtttttg cetttaeta aaatgtgatt
                                                                       240
gtttctgttc attgtgtatg cttcatcace tatattagge aaattccatt ttttcccttg
                                                                       300
                                                                       301
      <210> 287
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 287
tacagatetg ggaactaaat attoaaaatg agtgtggetg gatatatgga gaatgttggg
                                                                        60
cccagaagga augtagogat cagalaitac aacagettly tittgaggg; tagaaatatg
                                                                       120
assigniting gitalgaach cacegittag goegongnge cagestootg accolotyce
                                                                       180
regiggital creeterra gringgeige ciralgital cacagiatic cattligith
                                                                       240
gttgeatgte tigtgaagee ateaagatti telegiotgi titeeteta tigglaatge
                                                                       300
                                                                       301
      <210> 288
      <211> 3D1
      <212> DNA
      <213> Homo sapien
      <400> 288
gtacacctaa ctgcaaggan agctgaggaa tgtaatgggc agccgctttt caagaagtag
                                                                       60
agtcaatagg &Ag&caaatt ccagttccAg ctcagtctgg gtatctgcaa &gctgcaaaa
                                                                      120
gatetteana gacaatetea agagmatatt teettaaagt tggcaatetg gagateatac
                                                                      180
asaagcatot gotttigiga titaattikg oloatotggo oociggaaga alocsaacag
                                                                      240
tetscettaa titteggarga atgestgatg gadatteaat aatttagana gitaannaa
                                                                      300
                                                                      301
      <210> 289
      <211> 301
     <212> DNA
     <213> Homo sapien
     <220>
     <221> misc_feature
     <222> (1) ... (301)
     <223> n - A,T,C or G
     <400> 289
```

```
ggtacactgt ticcatgtta tgtttctaca cattgctacc tragtgctcc tggaaactta
                                                                          60
 grittigatg telecoagia gieracette attiazetet tigaazetgi aleatettig
                                                                         120
 craagtaaga gtggtggcct atttcagctg ctttgacaaa atgactggct cctgacttaa
                                                                         180
 cgttctataa atgaatgtgc tgaagcaaag tgcccatggt ggcggcgaan aagagaaaga
                                                                         240
 tgtgttttgt tttggactet etgtggteee ttecaatget gtgggtttee aaccagngga
                                                                         300
                                                                         301
       <210> 290
       <211> 301
       <212> DNA
       <213> Homo sapien
       <220>
       <221> misc_feature
       <222> {1)...(301}
       <223> n = A, T, C or G
       <400> 290
acactgaget ettettgata aatataraga atgettggea tacacaagat tetataetae
                                                                         60
tgartgatct yttoatttet etcacagete ttacecceaa aagettttee acertaagty
                                                                        12D
trotgacete ettitetaat cacagtaggg atagaggcag anccacetur aatgaacatg
                                                                        180
gagttctatc augaggcaga ascagrucag autcccagtt ttarcattcg ctagragtgc
                                                                        240
tgeettgaae aasaacettt etecatgiet cattteette atgeeteaag taacagtgag
                                                                        300
                                                                        301
      <210> 291
       <211> 301
      <212> DNA
      <213> Homo sapieu
      <400> 291
caggiaccas titotictat cotagaaaca titoattita tgitgitgas acataacaac
                                                                         60
tatatoaget agattttttt tetatgettt acctgetatg gaaaatttga cacattetge
                                                                        120
ttlactctit tgtttatagg tgaatcacaa aatgtattit tatgtattet gtagtteast
                                                                        180
agocatgget gittactton titaattiat ttagcataaa gacattatga aaaggcotaa
                                                                        240
acatgagett carttrecea chasersatt agratetgtt atttettaac egtaatgeet
                                                                        300
                                                                        301
      <210> 292
      <211> 301
      <212> DNA
      <313> Homo sapien
      <22Q>
      <221> misc_feature
      <222> {1) ... (301}
      <223> n = A, T, C \text{ or } G
      <400> 292
accttttagt agteatgtot aateatakat aagaaatcaa ttttataagg tocatatago
                                                                        60
tgtattanat aactttcaag tttmaaagat aadataccat cattttmaaat gttggtattc
                                                                       120
aaaaccaaag natataaccg aaaggaaaaa cagatgagac ataaaatgat tigenagatg
                                                                       180
ggaaatatag tastiyatga atgitnatta aattocagit ataatagigg ctacacacte
                                                                       240
tractacada cacagarrer acagtertat atgrescana caratteres tazettgada
                                                                       300
a
                                                                       301
```

```
<210> 293
       <211> 301
       <212> DNA
       <213> Homo mapien
       <400> 293
 ggtaccaagt gctggtgcca gcctgttacc tgttctcact gaaaagtctg gctaatgctc
                                                                          δD
 ttgtgtagtc acttctgatt ctgacaatca atcaatcaat ggcctagage actgactgtt
                                                                         120
 oacarasacy teactagesa agtagesaca getttaagte taaatacaas getgiteigi
                                                                         180
 gtgagaattt titaaaaggd tacttgtata ataaccettg teatttttaa tgtacetegg
                                                                         240
 cegegaceae getaageega attetgeaga taterateae aetggeggee getegageat
                                                                         300
                                                                         301
       <210> 294
       <211> 301
       <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1)...(301)
      \langle 223 \rangle n = A,T,C or G
      <400× 294
tgacccatas castatacae tagetatett tttaactgte dateattage accaatgaag
                                                                         60
attomataza attaccetta etcacacato ecaaaacaat ectocaamet cetagegaag
                                                                        120
titeactata gioacagano iluantatio acatigitit cinigiotac igoacatang
                                                                        160
ttcactacti tictgggata tictitacaa aatcttatta aaattootgg tattatcacc
                                                                        240
occastlata dagiagosca accacettat gtagttitta datgatagot etgtagaggt
                                                                        300
ţ
                                                                        3 D 1
      <210> 295
      <21,1> 305
      <212. DMA
      <213> Homo sapien
      <400> 295
graciettic telecectre telganttia attetiteaa etigeaatti genaggatta
                                                                        БQ
cacatttoac tgtgatgtat attgtgttgc aaaaaaaaa gtgtctttgt ttaaaattac
                                                                       120
tiggiligig aatocatcii gcillicco callggaact agicaltaac coatciciga
                                                                       180
actggtagaa aaacrtotga agagotagto tatcagoato tgacaggtga attggatggt
                                                                       240
teteagaaco atticaccoa gacageetgi tictateetg titaataaat tagittgggt
                                                                       300
totet
                                                                       305
      <210> 296
      <211: 301
      <212> DNA
      <213> Homo sapien
      <400> 296
aggiactatg ggmagcigct adominatat tigmingtam magintgiam igigcimici
                                                                        60
cacctagtag takactaaaa ataaactgaa actctatgga atctgaagtt attttccttg
                                                                       120
attasataga attastasac caatatgagg aaacatgaaa ccatgcaatc tactatcaac
                                                                       1BC
tttgaaaaag tgattgaacg aaccacttag ctttcagatg atgaacactg ataagtcatt
                                                                       240
```

```
tgtcattect ataeatteta ametetgtta ataegatgge etacagygag gammangggg
                                                                         300
                                                                         302
       <210> 297
       <211> 300
       <212> DNA
       <213> Homo sapien
       <220>
       <221> misc_feature
       <222> (1)...(300)
       <223> n = A,T,C or G
       <400> 297
artgagtttt aartggedge caagcaggem aggetggmag gtilligelet ettigligeta
                                                                         60
aaggittiga aaacciigaa ggagaatrat tiigacaaga agtachtaag agtotagaga
                                                                        120
acaaagangt gaaccagotg aaagototog ggggaanott acatgtgtty ttaggootgt
                                                                        180
tocatcatty genetycact geocatcect characttet etgggetege etgagtegte
                                                                        24 D
accentote geregosace aesctaagee gaattetes gatatecate acactegoss
                                                                        300
      <210> 298
      <211> 301
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc feature
      <222> (1)...(301)
      <223> n = A, T, C \text{ or } G
      <400> 29B
tatggggttt gtcacccaaa agctgatgrt gagaaaggec teertgggge rentcteggg
                                                                         60
ggcatctyay agacchggty ttccagtgtt tctggaaatg ggtcccagtg ccgccggctg
                                                                        120
tgaagetete agateuatea cgggaaggge etggeggtgg tggccacetg gaaccaceet
                                                                       180
gtoctgtotg titacalitic actaycaggt titctotggg caltachath tgttoccota
                                                                       240
caacagtgac ctgtgcattc tgctgtggcc tgctgtgtct gcaggtggct ctcagcgagg
                                                                       300
                                                                       301
      <210> 299
      <211> 301
      <212> DNA
      <213> Homo sapien
      <400> 299
gttttgagad ggagtttdac tettgttgee cagactggae tgraatggea gggtetetge
                                                                        60
tractgrace ctotgretce capyttegag canterter generagest recapytage
                                                                       120
tgggattgca ggctcacgcc accataccca gctaatttt ttgtatttt agtagagacg
                                                                       180
gagtttegee atgttggeea grtggeetea aarteetgae rtcaagegae etgeetgeet
                                                                       240
Courcects asstantage atterages tragtcases carreagest associatit
                                                                       300
                                                                       3 D 1
      <210> 300
      <211> 301
      <212> DNA
      <213> Homo sapien
```

```
<400> 300
attragtttt attigetyre coaglatety taaccaggag tyroacaasa teligeraga
                                                                         ĸ٨
tatgtcccac accomptage anagement acctegetac trectetate ageragetra
                                                                        120
grigcation areaggited dagretasing agitteacta congoragic tomacatta
                                                                       180
gtmaagcaag accatgacat tececcaegg ammtengagt ttgccccaec gtcttgttae
                                                                       240
tataaaqcot gertetaaca steettgett etteacaeca attorgageg catrocceat
                                                                       300
8
                                                                       301
      <210> 301
      <211> 301
      <212> DNA
      <213° Nomo sapien
      <400> 301
ttaaattttt gagaggataa aaaggacasa taatotagaa atgtgtotto ttoagtotgo
                                                                        60
agaggaccor aggborcoan gcaaccacht ggreaagggo atgaatantt asaagttggt
                                                                       120
gggaactcac aamgaccoto agagotgagm caccomoac agtgggagot cacamagacc
                                                                       180
ctungagetg agacacedae aacageggga geteacaaag acceteagag etgagacace
                                                                       240
racaacagca uctryttrag ctecorraty tyteaataag gatecaatyt compaagtyt
                                                                       300
                                                                       301
      <210> 302
      <211> 301
      <212> DWA
      <213> Homo sapien
      <400> 302
agglacocot traggetgig granatgact corpassing attituatal chagtiasts
                                                                       6D
tgaattttga aaattactac ttaatcctaa ttcacaataa caatggcatt aaggtttgac
                                                                       120
ttgagttggt tettagtatt atttatggta aataggetet taccaettge aaataactgg
                                                                       180
ccacatratt aatgactgac ttcccagtaa ggctctctaa gggggtaagta ggaggatcca
                                                                       240
caggatttga gatgctaagg crccagagat ogtttgatcc accrctctta ttttcagagg
                                                                       300
3
                                                                       301
      <210> 303
      <211> 301
      <212> DNA
      <213> Homo mapien
      <400> 303
AGGLaccase igtgyadala gglagaggat cattititet tircatatea artaagtigt
                                                                       60
atatigtitt tigacagitt aacarateli citotgicag agaitettic acaatagcac
                                                                       120
tggctaatgg aactacrgct tgcatgttaa aaatggtggt ttgtgaaatg atcataqucc
                                                                      180
agthmosggt atgittitict macigatott tigetegits changggace tenagacite
                                                                      240
catcgattit ataictgggg tCtagaaaag gagttaatri gttitccrtc ataamitrac
                                                                      300
C
                                                                      301
      <210> 304
     <211> 301
      <212> DNA
      <213> Homo mapien
      <400> 304
acatggatgt tattttgcag actgtcasco tgaatttgta tttgcttgac attgcctcat
                                                                       60
```

```
tattagetto agettoagot tacoracitt tigiotgoza ratgoaraas agaragigoo
                                                                         120
 ctttttagtg tatcatatca ggaatcatct cacattggtt tgtgccatta ctggtgcagt
 gactttcage cacttgggta aggtggagtt ggreatatgt ctccactgra auattactgu
                                                                         180
                                                                         240
 titteettit glaattaata agtgigigig tgaagattet tigagatgag glatatatet
                                                                         300
                                                                         301
       <210> 305
       <2115 301
       <212> DWA
       <213> Homo sapien
       c220>
       <221> misc_feature
       <222> [1]...(301)
       4223 > n - A, T, C or G
       <400> 305
gangtacago gtggtcaagg taacaagaaq acaaaaatgt gagtggcato otyggatgag
cappagaca garritgaca garacates cattracte torigotapy assatopages
                                                                         60
tanaggagga gasaragata Cunsatct.co andtongtat tanaggtatto tontgrotag
                                                                        120
                                                                        180
satattggta gasacasgas tacattcata tggcaantaa ctaaccatgg tggsacanaa
ttetgggatt taagttggat eecaangaaa ttgtattaaa agagetgtte atggaataag
                                                                        240
                                                                        300
а
                                                                        301
      <210> 306
      <211> 8
      <212> PRT
      <213> Homo sapien
      <400> 306
Val Leu Gly Trp Val Ala Glu Leu
      <210> 307
      <211> 537
      <212> DNA
      <213> Homo mapien
      <400> 307
acagggtatg aagggaaagg gagaggatga ggaagccccc ctooggattt ogtttggtcc
                                                                        60
ttgtgatcag gtggtctatg gggcttatcc ctaraaagaa gaatccagaa ataggggcac
                                                                       120
attgaggaat gatacitgag cocaaagage attcaateat tgitttattt geetimtitt
                                                                       180
cacaccatty gtgagggagg gattaccacc ctggggttat gaagatggtt gaacaccca
                                                                       240
Cacatageac Cggagatatg agateaacag titettagec atagagatte acageecaga
                                                                       300
aceaaasaac actraceec caraceaaat aeceraaaa erscactcaa aerraara
                                                                      360
aagaagcaay gactgttaga yycaggcttt atagtaacaa garggtyygg caaartetga
                                                                      420
tttccgtggg ggaatgtcat ggtcttgctt tactaagttt tgagactggc aggtagtgaa
                                                                      480
acticattagg rtgagaacet tgtggaatge acttgaceea sctgatagag gaagtageda
                                                                      540
ggtgggagcc tttcccagtg ggtgtgggac atatctggca agattttgtg gcactcctgg
                                                                      600
ttaragatar tggggcagea aataazaetg aatottg
                                                                      637
     <210> 30B
     <211> 647
     <212> DNA
     <213> Homo sapien
```

<220>

104

```
<221> Misc_feature
       <222> (1)...(647)
       <223> \alpha - A_1T_1C \text{ or } G
       <400> 30B
acgattitoa tiatcergia mategggion etemaggggo emmeraçago igggngecem
                                                                          60
tyctcagggg &dggttcata tgggactttc tactgcccaa ggttctatac aggatatada
                                                                         120
ggnycctcac agtatagate tggtagcaaa gaagaagaaa caaacactga tetettetg
                                                                         180
eracrectet gacertitgs asctretets accettiaga scangertae ctantatets
                                                                         24 D
ctagagaaaa gaccaacaan ggcctcaaag gatctcttac catgaaggtc teagctaatt
                                                                        300
cttggctaag atgtgggttd dacattaggt totgaztatg gggggaaggg toaatttget
                                                                        360
cattitgigt giggatammag tempgatgee emggggeemag agemagggge igetigetit
                                                                        420
gggascaety gotgagoata tmaccatagg ttatggggae cammacaaca toasaytoac
                                                                        480
tgtatcaatt gccatyaaga ettgagggae etgaatotae egatteatet taaggeagea
                                                                        540
ggacragitt gagiggcaat aaigragcag Cagaaicaat ggasacaaca gmaigatigr
                                                                        600
aatqteettt titticteet geticigaet igalaaaagg ggaccat
                                                                        547
      <210> 309
      <211> 460
      <212> DNA
      <213> Romo sapien
      <400> 309
actitatagi itaggotgga cattggaana aaaaaaaaago cagaacanoa tgigatagat
                                                                         60
zatatgatto gutguscant ucuagactga tgaatgatga acotgatgga utatigtatg
                                                                        120
gagcacatet teagcaagag ggggaaatac teateatett tggeeagcag tegtetgate
                                                                        180
arcaaacate atgocagaat actoagcaaa cottottago tottgagaag tommagtoog
                                                                        24 D
ggggaattta ttrctggoaa ttttaattgg actrcttatg tgagagcago ggctaocrag
                                                                        300
ctggggtggt ggagcgaacc cetcactagt ggacatgcag tggcagagct cctggtaacc
                                                                        360
acceagagga atacacagge aratgigtya tgecaagegt gacacetgta gracteaaat
                                                                        420
tigicitgtt titgicitic ggtgtgtaag attottaagt
                                                                        460
      <210> 310
      <211> 539
      <212> DNA
      <213> Homo sapien
      <400> 310
acgggactta tcaaatamag ataggaamag aagamaactc maatattata ggcagamatg
                                                                        60
ctaaaggttt taamatatgt caggattgga agaaggcatg gatamagaac amagttcagt
                                                                       120
taggaaagag asacacagaa ggaagagaca raataaaagt rattatgtat totgtgagaa
                                                                       180
gtcagacagt aagattigig ggaaatgggt iggilligitg taigglatgi attitagcaa
                                                                       240
tastetttat ggcagagaaa getaaaatee tittagettge gtgaatgate aettgetgaa
                                                                       300
ttoctcaagg taggoatgat gaaggagggt ttagaggaga caragacaca atgaactgac
                                                                       360
ctagatagaa ageettayta taeteageta ggaatagtga ttetgaggge acaetgtgae
                                                                       420
atgattatgt cattacatgt atggtagtga tggggatgat aggmaggaag macttatggc
                                                                       480
atatetteae coccaedasa gicagetasa tategggaes etsaceatee aggienaga
                                                                       539
      <210> 311
      <211 > 526
      <212 > DNA
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<213> Homo sapien

```
<220>
        <222> misc_feature
        <222> (1)...(526)
        <223> n = A,T,C or G
        <4DD> 311
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 ttttgacgtt ttctctsaac tactaaegag geattaatga tccatasatt atattatets
                                                                          60
 cattlacage attlacasts tottcageat gaaatattag ctacagggga agetaeataa
                                                                         120
 atteaacatg gaztaaagat tigicottaa atataatota caagaagadi itgatattig
                                                                         180
 titttcacaa gigaagoati citataaagi qicataacci tiilggggaa actaigggaa
                                                                        240
 anaatgggge ametetgang ggttttadgt atcttacetg eegetacaga ettemtaace
                                                                        300
 tototttaca gggagotoot gnagocoota dagaaatgag tggotgagat tottgattgo
                                                                        36 D
 acageaagag ettetestet aaareettte retttttagt atetgtgtat caagtataaa
                                                                        420
 agtturataa acugragent actratteta acceccatag cacagt
                                                                        480
                                                                        526
       <210× 312
       <211> 500
       <212: DNA
       <213> Homo sapien
       <220>
       <221> misc_feature
       <2225 (1)...(500)
       <223> n = A,T,C or G
       <400> 312
Cotetetete eccaeceet gaetetagag aartgggttt toteeragta etemagemat
teatttetea aageagttga gecaetttat teemaagtae aetgeagatg etemaaetet
                                                                        60
coalticing troccitics octgocagit tigotyactr towartigte atgagigtes
                                                                       120
grattaagga cattatgett ettegattet gaagacagge eetgeteatg gatgactetg
                                                                       180
gettettagg addatatitt tettecoasa teagtaggas stetaasett ateccetett
                                                                       240
tgckgatgtc tagckgcttc agkcatttgg ttangaaccc atgggaaaaa kaaaaatcct
                                                                       300
tgctaatgro gtttcctttg taaaccanga ttcttatttg nctggtatag aatatcagct
                                                                       360
ctgaacgtgt ggcaaagatt tttgtgtttg antalaggag aaatdagttt gctgaaaagt
                                                                       420
                                                                       480
tagtettaat tatetatugg
                                                                       500
       <21D> 313
       <211> 718
      <212> DNA
      <213> Homo sepien
      <220>
      <221> misc_feature
      <222> (1)...(718)
      <223> n = A,T,C or G
      <400> 313
ggagattigt grggtirgea gcegagggag accaggaaga retgeatggt gggaaggace
tgatgataca gaggtgagaa ataagaaagg ctgrcgactt taccatrtga ggccacacat
                                                                       60
ctgctgaeat ggagateatt aacatcacta gaaacagcaa gatgacaata taatgtctau
                                                                      120
                                                                      180
gtagtgacat gttlttgcac atttccayer cttttaaata tecaracaca caggaageac
                                                                      24 D
egaradas ecadadatoc cfdadadaya faccuddood ccyfoffdda foafodeta
gretrgettt grgeetinte regetigtga geganggaes tragaasstg astignigtg
                                                                      300
ttcettaaag gdtggeagga dddeagatec tgttgtggat atttatttga degggattuc
                                                                      360
                                                                      420
```

```
agatttgaaa tgaagtcaca aagtgagcat taccaatgag aggaaaacag acgagaaaat
                                                                         480
 cttgatggtt cacaagacat gcaacaaaca aaatggaata ctgtgatgac acgagcagcc
                                                                        540
 aschaggag gagataccae ggggeagagg teagyattet gaccetgetg ertaactgtg
                                                                         60D
 cgttatacca atcatitcta fittctaccot caascasgot gingastatc igacitacgg
                                                                        660
 thetenigge seacattile athateesee contentith asometante esagnigi
                                                                        718
       <210> 314
       <211> 358
       <212> DNA
       <213> Homo sapien
      <400> 314
gtttatttac attacagasa adaratrasg acastgtata ctatttcasa tatatccata
                                                                         60
cataatcama tatagotgta gtacatgttt toattggtgt agattaccac maatgcoogg
                                                                        1.20
cancatgigt againteitg thitalinit tiginiates tariguatig tglagiccae
                                                                        180
geteteggta gtecagecae tgtgaaacat geteeettta gattaaeett gtggaegete
                                                                        24 D
tightgtatt gotgaactgt agigeeeigt attitgette igicigigaa tleigitget
                                                                        300
tetggggest tteettgtga tgeagaggae caccaezeag atgaeageaa tetgaatt
                                                                        358
      <210> 315
      <211× 341
      <212> DNA
      <213> Homo sapien
      <400> 315
taccaccico cogriggoso igaigaștos estescoatg gioscoages coatgasggo
                                                                        60
ataggigatg atgaggacat ggaatgggee eeraaggatg gtetgteeaa agaagegagt
                                                                       120
gacccccatt rigaagatgi riggaaccte taccageagg atgatgatag coccaatgac
                                                                       180
agteverage tecoegacea geoggatate gteettaggg gteatgtagg ettectgaag
                                                                       240
tagettetge tgtaagaggg tgttgteeeg ggggetegtg eggttattgg teetgggett
                                                                       300
gagggggggg tagatgcage acutggtgaa gowgatgatg t
                                                                       341
      <210> 316
      <211> 151
      <212> DNA
      <213> Homo sapien
      <400> 316
agactgggca agactettac greeracact greatttggt cttgttgerg tatccattta
                                                                        60
tgraggeett teregagitt etgattataa acaeeaetgg agegatgigt igaciggaet
                                                                       120
cattcaggga getetggttg caatattagt t
                                                                       151
      <210> 317
      <211> 151
      <212> DNA
      <213> Homo sapien
      <400> 317
agaactagtg gatcctaatg aaatacctga aacatatatt ggcatttatc matggctcma
                                                                        60
atetteattt atetetggee ttaaceetgg etcetgagge tgeggeenge agateeengg
                                                                       330
ccapagetet gitettgees caccigettg a
                                                                       151
      <210> 318
      <211: 151
      <212> DNA
```

```
<213> Nomo sapi n
       <400> 318
 actggtggga gycgctgttt agttggctyt tttcagaggg gtctttcgga gggacctcct
                                                                          6 D
 grigcagget ggagtetett tatteetgge gggagacege meattechet geleaggetg
                                                                         120
 tgggggggt ttatcaggca gtgataeaca t
                                                                         151
       <210> 319
       <211> 151
       <212> DNA
       <213> Homo sapien
       <400> 319
 aactagtgga treagageta taggtacagt gtgateteag etttgraade acateteta
 natagatagi accengiati aategatatg tagagaaaga aatcacacca tiaataatgg
                                                                         ₽0
                                                                        120
 taagattggg titatgtgat titagtgggt a
                                                                        151
       <210> 320
       <211> 150
       <212> DWA
       <213> Homo sapien
       <400> 320
aartagigga teractagie ragigiggig gaattedatt gigtiggggi tetagatege
                                                                        60
gagoggotgo cottettett ttettetta gggggaatt tettettt aatagttatt
                                                                        120
gagtgttcta cagcttacag teaataccat
                                                                        150
      <210> 321
      <2112 151
      <212> DNA
      <213> Homo sapien
      <400> 321
ageaactity titticatee aggstattit aggettagga titteetetea cartgeagtt
                                                                        60
tagggtggra tigtaaccag clatggcata ggtgttaacc aaaggctgag takacatggg
                                                                       120
tgcctctgag dastcaaagt cttcatacac t
                                                                       151
      <210> 322
      <211> 151
      <212> DNA
      <213> Homo sapien
      <220>
      <221> misc_feature
      <222> (1) ... (151)
      <223> n = A, T, C or G
      <400> 322
aterageate ticicetytt tettycette ettitette tiettasatt etgettyagg
                                                                       60
tttgggettg gteagtttge cacagggett ggagatggtg acagtettet ggeattegge
                                                                      120
attgtgcagg grtcgcttca nacttcragt &
                                                                      151
      <210> 323
      <211> 151
      <212> DNA
```

```
<213> Homo mapien
       <220×
        <221> misc_feature
       <222> (1)...(251)
       <223> n - A,T,C or G
       <400> 323
 tgaggacttg tkttcttttt ctttattttt aatcototta ckttgtaaat atattgeota
                                                                       6 D
 nagactrant tactarroag titgtggtht twigggagaa aigtaacigg acagitaget
                                                                      120
 gttchatyma meagacactt ancccatgtg g
                                                                      151
       <210> 324
       <211× 461
       <212> DWA
       <213> Homo sapiem
       <220>
       <221> misc_feature
       <222> (1)...(461)
       <223> n = A,T,C or G
       <400> 324
 acctglgtgg aattteaget tteeteatge aamaggattt tgtatemeeg geotaeltga
                                                                      60
 agaagtqqtc agctaadgga atcceggttg ttggttggac tqttaatacc tttgatgaaa
 agagttacta Chasteceat Cttggtteca getatateae tgaeageatg gtagaagaet
                                                                     120
                                                                     180
grgaacctom ettetagaut ttracggtgg gargaaacgg gttcagaaac tgrcagggge
                                                                     240
ctcatacagg gRtatcaaaa taccettigt gutacccagg ccctggggaa tcaggigact
                                                                     300
caracaaaty caatagttyy teactycatt titacctyaa ccaiagriaa acceggigtt
                                                                     360
gecaceatge accatggest gecagagite ascaetgitg elettgassa tegggietga
                                                                     42D
 asasacquae aagagcooct genetgcoot agetgangna e
                                                                     461
      <210> 325
      <213> 400
      <212> DNA
      <213> Homo sapien
      <400> 325
acactyttic catettatet tictaracat igctecetca eigrecetee aaactteeet
                                                                     60
tttgatgtot ccaagtagto cacottoatt taactotttg aaactgtato atotttgcca
                                                                     120
agtaagagtg giggcciatt teagcigcit teacaaaatg aciggciect gactiaacgi
totataaatg aatgugotga agcaaagtgo onatggtggo ggogaagaag agaaagatgt
                                                                     180
                                                                    240
gttttgtttt ggactetetu tggteeette caatgetgtg ggtt@ceaac caggggaagg
                                                                    300
gtocettttg cattgeraag tgocataacc atgageacta egetaccatg gttctgeete
                                                                    36 D
ctggccaagc aggctggttt gcaagaatga aatgaatgat
                                                                    400
      <210> 326
      <211> 1215
      <212> DNA
      <213> Homo sapies
      <400> 326
6 D
gttetgctcg ggcgtectgg tgcatccgca gtgggtgctg tcagccgcac actgtttcca
                                                                    120
gaactertae accateggge tegegertgea caetettgae ecceaecaae agreaggee
                                                                    180
```

```
ccaghtggtg gaggccager totcogtacg gcacecagag tacaacegae cettgetege
                                                                       240
tazegarete atgeteatea agttggacga atregtotor gagtetgara coatecggag
catrageatt gritcgcagt gccctarcgr ggggaactct tgcrtcgttt ctggctgggg
                                                                       300
                                                                       36 D
tetgetggcg aacggeagaa tgeetaccgt getgeagtge gtgaacgtgt cggtggtgte
tgaggaggte tgcagtaagr tctatgaecc gctgtaccac dccagcatet tctqcgccgg
                                                                       420
cadadades arccadasad serectaes edataserer adadadece farerdes
                                                                       4 B Q
                                                                       540
casstacted cassesetta tatetteed wasanceed tatagecase trasentates
                                                                       600
aggigictad acraaccidi geaaattead igagiggata gagaaaaccg tecaggedag
                                                                       660
ttaactctgg ggactgggaa cocatgaaat tgacccccaa atacatcctg eggaaggaat
                                                                       720
traggaatat etgiteccag ceretecter etcaggecea ggagtecagg cerecagece
                                                                      780
ctecteerte aaaceaaggg tadagateed cagreected teerteagar ccaggagted
agacccccca gerretecte reteagacce aggagtocag eccetretec etcagaccea
                                                                      840
                                                                      900
pgagtecaga cooceeagee octobtecct oxgaeecagg ggtccaggee coosaecoot
                                                                      960
cetecctong acteayaggs ceaageocer aacceoteet teeccagace cagaggteca
ggtoeraged detectoret Cagadecage ggtocaatge caectagest etecetgtac
                                                                     102D
acagtgeece errgtggeac grigacecaa ecttaccagt tegrittea tittitgtee
                                                                     1080
ettteeeta galeengaaa taaagtetaa gngaagegen aaaaaaanaa aaaaaaaaaa
                                                                     1140
                                                                     1200
бевев врваябеев
                                                                     1215
```

<210> 327

<211> 220

<212> PRT

<213> Nomo sapien

<400> 327

Glu Asp Cys Ser Pro His Ser Gln Pro Trp Gln Ala Ala Leu Val Met l 5 Glu Asn Glu Leu Phe Cys Ser Gly Val Leu Val His Pro Gln Trp Val 25 Leu Ser Ala Ala His Cys Phe Gln Asn Ser Tyr Thr Ile Gly Leu Gly 40 Leu His Ser Leu Glu Ala Asp Gln Glu Pro Gly Ser Gln Met Val Glu 55 Ala Ser Leu Ser Val Arg His Pro Glu Tyr Asn Arg Pro Leu Ala Asn Asp Leu Met Leu Ile Lys Lau Asp Glu Ser Val Ser Glu Ser Asp 90 Thr lle Arg Ser Ile Ser Ile Ala Ser Glo Cys Pro Thr Ala Gly Asn 105 Ser Cys Leu Val Sor Gly Trp Gly Leu Leu Ala Asn Gly Arg Met Pro 120 Thr Val Leu Gln Cys Val Asn Val Ser Val Val Ser Glu Glu Val Cys 135 Ser Lys Leu Tyr Asp Pro Leu Tyr His Pro Ser Met Phe Lys Ala Gly 150 155 Gly Gly Gln Asp Gln Lys Asp Ser Cys Asp Gly Asp Ser Gly Gly Pro 165 170 Leu Ile Cys Asn Gly Tyr Leu Gln Gly Leu Val Ser Phe Gly Lys Ala 185 130 Pro Cys Gly Gln Val Gly Val Pro Gly Val Tyr Thr Asn Leu Cys Lys 200 Phe Thr Glu Trp Ile Glu Lys Thr Val Gln Ala Ser 210 215

<210> 328

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<211> 234
       <212> DNA
       <213> Homo sapien
       <400> 328
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                                                                         60
agocotygea ggeggeartg gteatggaaa argaattgit etgoteggge gteetggige
                                                                        120
atergeagig ggiqeigtes greacacact gitteragas etectacace ategggeigg
                                                                        180
accráques rerrasace áscessase cadabaces daractadas acca
                                                                        234
       <210> 329
       <211> 77
       <212> PRT
      <213> Homo sapien
      <400> 329
Leu Val Ser Gly Ser Cys Ser Gln Ile Ile Asn Gly Glu Asp Cys Ser
                                     10
                                                         15
Pro His Ser Gln Pro Trp Gln Ala Ala Leu Val Met Glu Asn Glu Leu
Phe Cys Ser Gly Val Leu Val His Pro Gln Trp Val Leu Ser Ala Thr
                             40
Ris Cys Phe Gln Asn Ser Tyr Thr Ile Gly Leo Gly Leo His Ser Leo
                         55
Glu Ala Asp Gln Glu Pro Gly Ser Gin Met Val Glu Ala
      <210> 330
      <211> 70
      <212> DNA
      <213> Homo sepien
      <400> 330
cerascacea typeregate coatocotga rteegecote aggatequie gtetetggta
                                                                        សា
gctgcagcca
                                                                        70
      <210> 331
      <211> 22
      <212> PRT
      <213> Homo sapien
      <400> 331
Gin His Asn Gly Pro Ile Pro Ser Leu Thr Pro Pro Ser Gly Ser Leu
                                    10
                                                         15
Val Ser Gly Ser Cys Ser
            20
      <210> 332
      <211> 2507
      <212> DNA
      <213> Homo sapien
      <400: 332
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                                                                       60
typecetteet totatatata getgegecco amateaggaa matgetatoc agtggggtgt
                                                                      120
```

```
gtacateasc Egitteagett ceigggammag tagilgiggi daemaggaget saturæggim
                                                                         180
 trgggaaqga gacagccdaa gaqotggrtc адиваддадо trgagtatat ttagcttgrr
                                                                        240
 gggatgtgga akagggggaa ttggtggova aagagatcea gaveaegaca gggaaccago
                                                                        300
 aggrattiggt geggaaactg gacutgtetg atactaagto tattegaget tttgctaagg
 gottettago tgangsaass cacetocacg tittgateas caatgeagga gigatgatgt
                                                                        360
 gtoogtacto gaagacagea gatggetttg agatgeacat aggagteaac coettgggte
                                                                        420
 acttertert anceeatetg regetagage aactaaagga ateegreeva teauggatag
                                                                        480
 taaatgtete tteestegea cutcareteg gaaggateea ettesataas etgenegegeg
                                                                        540
                                                                        600
 agazatteta taatgeagge etggeetzet gtescageaa getageesze atectettea
 ercaggaaet ggcceggaga ctaaaaggct etggegttae gacgtzttet gtacaccetg
                                                                        660
                                                                        720
 geacagenca atotgaactg getnggoart datetttrat gagatggatg tggtggettt
                                                                        780
 teteetttt cateaagaet ooteageagg gageecagae ragoetgeae tgtgoettaa
 Cagaagghol tgagattota agtgygaate atttcagtga etgtcatgtg goatgggtet
                                                                        840
                                                                        900
 chgcccaage teghaatgag actatageaa ggcggchytg ggaeghcagh tghgacctgc
 tyggerteer aatagastaa raggsagtge cagttggaes caagagaaga stgeagsaga
                                                                        960
                                                                       1020
 rtacacagta cttottgtca aaatgattot cetteaaggt totomaaace totagemea
                                                                       1080
 agagagcaea accettocage chiqcetgen togetmercag trasadorea grigeactique
                                                                      1140
 agattegtet anatgtetgt catgteraga tetaettige ttetgttact geragagtta
 Ctagagatat cataatayga taagaagacc Ctcatatgac ctgcacagct cattttcctt
                                                                      1200
 rtgaaagaaa ctactacrte qqagaatcta agrtatagca gggatgatst atgcaaattt
                                                                      1260
                                                                      1320
 gaactagett cttigttom aattoagite etoccaacca accagiotic acticaagag
                                                                      1380
ggncecactg ceaceteage ttaacatgma taacaaagae tggeteagga geagggettg
                                                                      1440
eccaggeaty gradatese gasasteagr agtreasgae cageetagee sacargarga
                                                                      1500
aacccoacct ctactaaaaa ttgtgtatat ctttgtgtgt cttoctgttt atgtgtgcca
                                                                      1560
agggagtatt ticacakagt icaaaacage cacaataate agaganggag caaaccagtq
                                                                      1620
eratroague thtatgessa tgassigoug casagggasg cagattetgu atsigtiggt
                                                                      16BQ
жастасссяс слададсясь tgggtaqcag ggwayaagta алгааадцью адурдватыс
tggaagatee tgcaceest geogggacte gttaaggatt aectegcocc tteaggette
                                                                      1740
actagttaag gattaatago saaagayatt aaatatgota acatagotat ggaggaatty
                                                                      1800
agggcaages eccaggactg atgaggtelt ascaaaaace agtgtggcaa asaaaasaa
                                                                      1860
                                                                      1920
edinazazan dazzateeta azzaeara aneddazaza dezateete atteagand
attatottag ggactgatat tygtaattat ggtcaattta ataatatttt gggycattte
                                                                      1980
cttacattgt cttgacaaga ttaaaatgtc tgtgccaasa ttttgtattt tatttggaga
                                                                      2040
                                                                      2100
cttcttatra agagtaatgo tgccaaagga agtctaagga attagtagtg ttcccatrac
                                                                      2160
tigittggag igtgctatte taaaagatti igattteetg gaatgacaat taratttaa
ctt.cggtggg ggamagagtt araggaccac agrettemet tergaractt grammtaat
                                                                      2220
cttttattgc acttgttttg accattaagn tatatgttta gaaatggcca ttttacggaa
                                                                      2280
                                                                      2340
asattagaaa asttetgata atagtgoaga ataaatgaat taatgittta ettaattat
                                                                      2400
attgaactgt caatgacasa taassattcc tittgattat tittligttit cattlaccag
                                                                     2460
aataaaacg taagaattaa aagtttgatt acaaaaaaa aasaaaa
                                                                     2507
      <210> 333
      <211 > 3030
      <212> DWA
      <213> Homo Sapien
      <400> 333
geaggreact tgreageteg gagegattta aaacgettte gatteeceee geeteggtyg
                                                                       60
ggagagrgag ctgggtgccc cctagattcc ccgccccrgc &cctratgag rcgaccrtcg
                                                                      120
gctroatgga gcccggcaat tatgccanut tggatggago raaggatatu gaaggottgr
pådagedåð sagagageda syteraated eeceetede tepaseede egcesaeda
                                                                      18 D
                                                                      240
egeotacyet gatyertget gteaactaty ceccettyga totgecaggo teggogyage
                                                                      300
cyrcaaagca atyccacca tycoctyggy tycrccayyy gacytoccca yctcccytyc
                                                                      360
cttatggtta Ctttggaggd gggtactact cctgdcgagt gtdccggagd tcgdtgaaac
ccfdfdccca ddcaeccccfddag accccdcdd dactcccacd bccdddagaad
                                                                      420
```

120

180

240

300

```
agtacccas yegenddaet gastttgeet tetateessg atateessge acetacease
                                                                         540
 ctatggccag tikectggad gtgtclgtgg tgcagactct gggtgctect ggagaacege
                                                                         600
 gaeatgacto cetyttycot gtggzeagtt aceagtottg gyctetegel gytggetgga
                                                                         660
 anagroagat gtyttgeeag ggagaacaga ancomeeagg torettitgg ampgeageat
                                                                         72D
 ttgcagactc cagcgggcag caccetectg acgcetgcge etttegtege ggetgcaaga
                                                                         780
 aacquattee glacagrasu gggeaglige gggagetgga gegggagtat geggetaara
                                                                         B4Q
 agttcatcac caaggacaag aggograaga totoggoago caccagooto toggagogoo
                                                                         900
 agattaccat Ctggtttcag aaccgcoggg tcaaagagaa gaaggttetc gocaaggtga
                                                                        96 D
 agaacagche tarccettaa gaymteteet tgretghytg ggaggagega magthyggggt
                                                                       1020
 afteradaga secradaest ridetendes cedastadas crasadasts pactaesada
                                                                       1 DBO
 cccrtagaga caacaccett cccaggccae tggctgctgg actgttecte aggageggee
                                                                       1140
 tgygtaccca gtitgtgcag ggagacggaa ccccatgtga cagcccactc caccagggtt
                                                                       1200
 corssagase ctypecragt Cataatestt cateetgaca gtggcaates teacgatase
                                                                       1260
 cagtactage tgccatgate gttagectes tattttctat ctagagetet gtagageact
                                                                       1320
 ttageaecrg ctttcatgaa ttgagctest tatgeatasa tttggaagge getecetttg
                                                                       2380
 cagggaaget tirictcaga concettera tracaceter raceteggia acageaggaa
                                                                       1440
 gactgaggag aggggaargg goagattogt tgtgtggrtg tgatgtoogt ttagcatttt
                                                                       1500
 totragetga cagetgggta ggtggacaat tgtagagget gtetetteet ceeteettgt
                                                                       1560
 eraccounta gggtgtacer detggtettg gaageaceca toottaatae gatgatttt
                                                                       1620
 Ctgtegtgtg acastgaage cageaggetg coectagseca gteetteett ccagegaaaa
                                                                       1680
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                                                                       1740
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240

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42 D

480

540

600

660

72D

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docasaderae errecese acreadarán redealrado dedaratre escentesa
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 Gly
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 Thr
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 Ser
 Gly
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 Leu
 Pro
 Arg
 Leu
 Pro
 Arg
 Leu
 Pro
 Arg
 Leu
 Pro
 Arg
 Leu
 Arg
 Ala
 Ala
 Ala
 Phe
 Ser
 His
 Gin
 Lys
 Pro
 Ala

 Val
 Ile
 Glu
 Leu
 Glu
 Arg
 Lys
 Phe
 Ser
 His
 Gin
 Lys
 Tyr
 Leu
 Ser
 Ala

 Pro
 Glu
 Arg
 Ala
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 Ala
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 Thr
 Glu
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 Ala
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 Leu
 Leu
 Leu

 Val Lys Ile Trp Phe Gln Asn Arg Arg Tyr Lys Thr Lys Arg Lys Gln 85
 90
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 Leu Ser Ser Glu Leu Gly Asp Leu Glu Lys His Ser Ser Leu Pro Als 100
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 110

 Leu Lys Glu Glu Ala Phe Ser Arg Alu Ser Leu Val Ser Val Tyr Asn 125
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 Tyr
 Met
 Ala
 Ala
 Ala
 Pro
 Glu
 11e
 Arg
 Lys
 Met
 Leu
 Ser
 Ser
 Gly
 Val

 Cys
 Tyr
 Met
 Ala
 Ala
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 Pro
 Glu
 Pro
 Gly
 Lys
 Val
 Val
 Val
 Tyr
 Gly
 Arg
 Arg
 Val
 Val
 Val
 Gly
 Arg
 A

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145
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Leu Glu Lys Leu Lys Glu Sor Ala Pro Ser Arg Ile Val Asn Val Ser
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Sar Leu Ala Ris His Lew Gly Arg Ile His Phe His Ash Leu Glo Gly
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Glu Lys Phe Tyr Asn Ala Gly Leu Ala Tyr Cys His Ser Lys Leu Ala
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Asn Ile Leu Phe Thr Gln Clu Leu Ala Arg Arg Leu Lys Gly Ser Gly
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Val Thr Thr Tyr Ser Val His Pro Gly Thr Val Glo Ser Glu Leu Val
                    23 D
                                         235
Arg Mis Ser Ser Phe Met Arg Trp Met Trp Trp Len Phe Ser Phe Phe
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                                     250
The Lys Thr Pro Gln Gln Gly Ala Gln Thr Ser Leo His Cys Ala Leo
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Thr Glu Gly Leu Glo Ile Leo Ser Gly Asn His Phe Sor Asp Cys Mis
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aatttactta atgaaaaact gaagagaaca aaatttgtaa ccactagcac ttaagtactc
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cotygonggt maaccmatge emagagageg atggmaaccma ttggcmagae tttgttgatg
                                                                        180
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teceteagaa gagtgeasag aamagteaga gatgetataa tageagetat tttaattgge
                                                                        3 D D
aagtgccact @tggaaagag ttcclqtgtg tgctgaagtt ctgaagggca gtcaaattca
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cottettatt attigateta gaaatigeed teetittace cotaceatga geoctacaaa
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caactaacct greactaata gttatgtrat coctottett aatcatoate ctageortaa
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  gttcaagtgc aacaatgact atgtgcctgt gtgtggctcc &atggggaga qctaccagaa
                                                                         240
  tgagtgttac ctgcgacagg ctgcstgcaa acagcagagt gagatacttg tggtgtcaga
                                                                         300
  aggateatgt gecacagtee atgaaggete toggagaaact agteassagg agaesteeac
                                                                         360
  cigigatati toccagitto oigcagoaig toacgaagat gccgaggatg iciggigtot
                                                                         420
  Statsatatt dactatter agreeasett reatecerte theattre ataggasate
                                                                         480
  ttalgataat gowigeraaa teaakgaago atogigtoag aaacaggaga aaatigaagt
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 Catglettty ggtcgatgte aayataacae aactacaact actaagtetg augatgggca
                                                                         600
 ttatgcanga ecagattatg cagagantge taacnaatta gaagnaagtg ccagaganca
                                                                         660
 Concatacet tgtccggaar attacaatgg cttctgcatg catgggaagt gtgagcattr
                                                                        720
 tateaatatg caggagecat ettgeaggtg tgatgetggt tatactggac aacaetgtga
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 Adamaaggac tacagtgttc tatacgitgt teenggteet graegattte agtatgtett
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                                                                        900 -
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 gloasacott aatgocatty ttattytysa ttagyattaa ytagtaattt toaaaattoa
                                                                        60
cattaacttg attitasaat cagwiitgyg agteatitae cacaagriaa migigiacac
                                                                       120
tatgateaan acaeccattg tattcctgtt tttctuaaca gtcctaattt ctaacactgt
                                                                       180
atatateett equeateaat gaacuttgit tiettitaet eeagtaataa agtaggeaca
                                                                       240
patetgteca caseasacte gecetetest gecetgeete teaccatget etgetecagg
                                                                       300
tragerert titggreigt tigttitgte angaacetan telgetiett gettittig
                                                                       360
graetatata titayggasg atgitgetti gecezearae gaagcazage aa
                                                                       420
                                                                       472
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      <211× 251
      <212> DNA
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tgtggataag gccaggtcza tggctgraag catgcagaga aagaggtaca tcggagcgtg
                                                                       60
raggotgogt tergteetta egatgaagac cargatgoag titoraaaca tigocactac
                                                                      120
atacatggan aggagggga agcraaccea gaaatgggct ttctctaatc otgggatacc
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aataagcaca a
                                                                      240
                                                                      251
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     <211> 436
     <212> DNA
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<2)3> Homo sapien

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 gtatucaaaa gcamaacagc mgatatacaa aattaaagag mcagamgata gacattmaca
                                                                         180
 gateaggcee rttatecott gaceotcree atcreature thtasacatt toggasetga
                                                                         240
 gggggaraaa tggaagccar atcaaatttg tgtaaaacta ttcagtatgt ttcccttgct
                                                                         300
 tcatgtctga raaggototo cottoaatgg ggatgacaaa otocaaatgo cacacaaatg
                                                                        360
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 gggctcctae tgtagt
                                                                        436
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       <211> 854
       -212> DNA
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                                                                         60
                                                                        120
atcagggace accettiggg tegatatett gettaatetg catettitga gtaagateat
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ctogcogtag aagetgttet erapytaeat ttetetaget catgtacaaa aacateetga
                                                                        240
aggaettigt caggigeett getaaaagee agalgegite ggractieet tggirigagg
                                                                        300
ttaattgcac acctacagge actgugetea tyettecang taltttgtee teactttagg
                                                                        360
gtgagtgade gatcoccatt ataggagout tigggagaga toatateeza gotgactott
                                                                        420
gagteratge agtaatgggg tagatgtgtg tggtgtgtct teatterige magggtgett
                                                                        4 B O
ettagggagt gttcccagga ggaaraagtc tgaaaccaat catgaaataa acggraggtg
                                                                       540
tgaactggaa aactaartem aaagagagat cytgatatem gtgtggttga taracettgg
                                                                       €¢0
Cantatgone ggctcteatt tgcccataut tgaaatmita attcagcttt ttgtaateen
                                                                       650
aaataacaaa gyattgagaa teatgytgte taatgtataa aagaeecagg aaacataaat
                                                                       720
atalcaacty caleaatyta aaatycatyt gacccaagaa ggccccaaag tygoagacaa
                                                                       780
cattgracco attiticcott commantgig agoggoggge ctgotgcttt caaggoigte
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acacgggatg teag
                                                                       854
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                                                                       120
attendesage entactigga tigtengegaa quiggicatigg aggengenge agconetiggg
                                                                       180
garagesteg clytassaag cotaccastg agageteagt tesaggegas coacceette
                                                                       24 D
etgttetta taaggemeet temtacemae acgatectat tetgtggema gettgeetet
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ccetaatcag atggggttga gtaaggetea gagttgcaga tgaggtgcag agacaatcet
                                                                       360
gtgactttcc cacggccaaa aagccgttca cacctcacgc acctctgtgc ctcagtttgc
                                                                      420
testetgens astaggieta ggnittette esaccatice atgagetgig aagetaagge
                                                                      480
ttigttaate aiggaaaaag gtagaettat geagaaagee titeiggett tettateegt
                                                                      540
ggtqtctcat ftgagtqfty trcagtgara tqatcaagtc satgagtaaa atttcaaqgg
                                                                      600
attagattit ettgketigt abstatetet gagateliga ataagtgace igacaletet
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gcttasagaa aaccag
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<210> 356

<211 > 574

<212> DNA

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                                                                        120
 caagettere attegragat etcagtgeet atgagtatet gacacetgtt ertetettea
                                                                        180
 gretettagg gaggettaan tetgreteag gtgretaag agtgreagee caaggkggte
                                                                        240
 aanagtecac aanactgeag tetttgeteg gatagtnage cangeagtge etggacagea
                                                                        30ሰ
 gagetottit citgggcaar agataaceag acaggaetot aatogtgeto ttatteaca
                                                                        360
 ttottetgte tetgeetaga etggaataaa aageeaatet etetegtgge acagggaagg
                                                                        420
 agatacaago togittacat gigatagaic taacaaaggo atotacogaa giotggicig
                                                                        480
 galagacggc acagggagct cttaggtcag cgctgctggt tggaggacat tcctgagtcc
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                                                                        574
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       <211> 393
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       <213> Homo sapien
       <400> 357
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tantatggkg kettgttead tatacttasa aatgeaceae teatasatat ttaatteage
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                                                                       120
 aagccataac caaracttga ttttatcaat aaaaacccct aaatataaac ggaaaaaaag
                                                                       180
atagatataa ttatteeagt ttttttääma ettamamat atteeattge egaattaara
araarataag tgitataigg axagaagggc attcaagcac actaaaraaa cotgaggkaa
                                                                       240
                                                                       300
gcataatctg tacaaaatta aactgtoott titggcatti taxcaaatti gcaacgktot
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ttttttttt ttttttt tac
                                                                       393
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                                                                       22Q
gcatagagta gggaagctee tocagracag ggaggtcera gagacatecc taaggaagtg
                                                                       180
gagtttaaac tgagagaage aagtgettaa actgaaggat gtgttgaaga agaagggaga
                                                                       240
gtagaacaat trgggcagag ggaacettar agaceetaag gtaggaaggt tcaaagaact
                                                                       300
gaaagagage tagaacaget ggagregtte teeggtgtaa agaggagtea aagagataag
                                                                      360
ettaaagatg tgaagattaa gatcttggtg gcattcaggg attggcactt ctacaagaaa
                                                                       42Q
tcactgangg gagtaatgtg acattacttt tcacttcagg atggccattc taactccagg
                                                                      480
gggtagactg gactaggtaa gactggaggr aggtagacct cttctaaggc rtgcgatagt
                                                                      540
gaaagacaaa aataagtggg gaaattcagg ggatagtgaa aatcagtagg acttaatgag
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caagreagag gtteeterac aacaarragt
                                                                      630
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      <211> 620
      <212> DWA
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                                                                      120
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ctraccagaa gadtaaagtg ctchgooagt tattaaagga ttactgctgg tgadttaaat
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 aggattmact gttttaggka ragatatmaa gettegeese ggkagagatg gacamagese
                                                                         240
                                                                         300
 adagacaaca tgatacetta gydagcaaca rtaccettte aggratdaaa tetggagdaa
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 tgcaacatta tgcttcatgu ataatutgta gunagaaggt ctgatgaaau tgacateett
                                                                         420
 aatgraagat aacttrataa gaattetggg teaaataaaa tretttgaag aaaacatera
                                                                         42D
 aatotratig autiatessa tactatettg gestatasee tatgaagges aasetsaacs
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       <212> DNA
       <213> Houmo saplen
       <400> 360
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tactcatrat titiggcoag cagitgitty atraccazae atratgcoag aatartcage
                                                                        120
                                                                        180
anacottott agotottgag magtoaamgt coggggmant ttaltoctgg caatittaat
                                                                        240
tggactcctt atglgagage ageggetace czgctggggt ggtggagega accegteact
                                                                        300
agtggacatg cagtggcaga geteetggta accaeetaga ggaatacaca ggcacatgtg
                                                                        36D
tgatgccaag egiganacet gtagcartes astitgtett gittitgtet iteggigtgt
                                                                        420
agattcttag t
                                                                        433
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                                                                       120
ttgggtcotc tggtctcttg ccaagtttcc cegccartcg agggagaaat atrgggaggt
                                                                       180
ttgacttert erggggettt enegaggget traengtgag ecotgeggee rteagggetg
                                                                       240
caaccctgga ttcaatgtct gamacctcgc tctctgccty ctggacttct gaggccgtca
                                                                       QQE
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                                                                       351
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                                                                      120
coorgation agasatgaer agettgggtg tittlaggtg cragigcigg gtragraget
                                                                      180
rgtamaggat ttrrgcgtre gtgtcgcagg aragacgtat atarttccct ttrttccca
                                                                      240
gtgtctcama ctgmmtatcc ccaaaggegt cggtaggaam ttccttggtg tgtttcttgt
                                                                      300
agttecattt etcactttgg treatetggg tgccrtecat etgetegere teggeatage
                                                                      360
cacacttyca Carattetee etgatangea egatgytyty gacagyaagy aagyatttea
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<211> 653

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                                                                        120
tgggaggcac tacgemagat gggactgegt retggggtga gacateetet cettggagat
                                                                        380
ctaacgaaze tteteaceta tgagttgtaa ageagaaata cetgnactae agacgagtge
                                                                        240
ccaacagcaa ccccccggaa gtatgagttc ctctryggcc tccgttecta ccatgagasc
                                                                        300
tagraxgaty maagtgutga gamtmattyo agaggutmag azaagagam entogugami
                                                                        360
ggtetgcaca gttcatggag gctgcagatg aggccttgga tgctctggat gctgctgcag
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craspacedo educabator desacosator cocacetado entidason desactarar
                                                                        480
ntgggeentg gagetgggat gacattgagt ttgagetget gacctgggat gaggaaggag
                                                                        540
attitiggaga techtogetee agaattooat tracettote egeragatae caccagaate
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                                                                       120
aanacaaggt ggatagatet agaattgtaa esttttaaga naaccatage atttgacaga
                                                                       180
tgagaaaget caattacaga tgeasagtta tametaazet, ectatagtag taaagaaata
                                                                       240
cattteacar cotteatata aatteactat ettggettga ggracteeat aaaatgtate
                                                                       300
acglycatag taaatottta tatttgctat ggcyttgcac tagaggactt ggactgcaac
                                                                       360
bagiggaige guggasaaig assicticti caategeeca g
                                                                       401
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                                                                       120
taccagagea teaagtetet geageaggte attettgggt aaagaaatga ettecacaaa
                                                                       1B0
ctotocator cetggottig gotteggoot tgogttting goatcaloto ogttaatggt
                                                                       240
gactgicacy atgigiatas tacagitiga caagodiggs tocatacaga cosciggaga
                                                                       300
acatteggea atgreecett tgtagecagt trettetteg agetecegga gageag
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      <2105 366
      <211> 1851
      <212 > DNA
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 tiggigttit dugaagagat tiltaacaic tylttiggit tglagicaga aagizactgg
                                                                        240
 canattacat gatgatgact agamacages tactetetgg ergtetter agatetragg
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 aagatacatc ascattttec traagtagag ggotgactat acttgoteat coacaacata
                                                                        360
 engeanghat gagageaght Chiceatate tatecagege atthaantee gethittet
                                                                        920
 tgattaaaaa tttcaccact tgctgtttt, gctcatgtat accaagtage agtggtgtga
                                                                        480
 gyccatyctt gttttttgat togatatoag caccytataa gagcagtgot ttggcdatta
                                                                        540
 attlatette attgragaes gestagtgts gagtggtatt tecatactes telggastat
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 trggateagt gecatetten ageaacatta angeacatte atetteetgg cattetacgg
                                                                        660
 cottightag agetgeete tittightgt casggecatt aegitgedat cgreigteea
                                                                        720
 gcacgagttt tactacttet gaattodest tggcagagge cagatgtaga gcagtoctet
 tttgettgtc cetcttyttc acateegtgt ceetgagcat yacgatgaga tcetttctgg
                                                                        780
                                                                        84 D
 ggantttacc ccarcaggca getnegtgga gettgtccag atertetcca tggacgtggt
                                                                        900
 acetgggate catgaaggeg etgteategt agtetecca agegactarg tigeteltge
                                                                        960
eget, coucts capeaggggs agragt gges gesceartly racetetter treesagegt
                                                                       1020
cttcacagaq gagtcgttgt ggtctccaga agtgcccarg ttgctcttgc cgctccccct
                                                                       1080
gtreatureg ggaggaagaa atgeaggaaa tgaaagatge atgeacgatg gtatmeteet
                                                                      1140
Caucratces articigger agræggicer tirrægrægg giggægeæg Cigirræcer
                                                                      120D
aragaggatg agatecagaa accacaatat ecatecacaa aradacaett ttrageraga
                                                                      1260
cacaggract gasatcatgt caretgegge ameatggtgg adectaceca atemescate
                                                                      1320
aagagatgaa gacuctgrag tatatetgra caaegtaata etetteatee ataaemaat
                                                                      1380
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ceaghogoag agaugeesca otgaagetet gtootcagoo atcagegeca oggacaggar
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                                                                      L5QQ
tgtgtttett ecccagtgat geagecteas gttareega agetgeegea geacaeggtg
                                                                      1560
getectgaga aacaceceag etetteeggt etameacagg caagteaata autgigstaa
                                                                      162D
tcacatasac agaattawaa gcaaagtcac ataagcatet cancagacac agaaaaygca
                                                                      1680
tttgacaaaa tccagcatco ttgtatttat tgttgcagto ctcagaggaa atgcttctoa
                                                                      1740
cttttcecca triaghatta tgttggctgt gggcttgtca caggtgghtt ttaltacttt
                                                                   - 1800
aaggtatgte cottetatge ctgttttget gagggtttts attetegtge c
                                                                      1851
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      <212> DNA
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trongrattt tgaagatama attrgtagat chatacettg ttttttgatt cgatatcage
                                                                      12 D
accrtataag agcagtgett tggeeattaa tttatettte attitagaca gertagtgya
                                                                      180
gagtggtatt tocatactca tetggaatat ttggateagt gecatgitee ageaacatta
                                                                      240
acgearatte atetteetgg cattgtacgg crtgtekgta ttagaccean aaacanatta
                                                                      300
catatottag genticaden taecettora cagotticao raactagita tattianagg
                                                                      360
aganaactua tittiatgir atgiattgaa atcaaacrea ceteatgetg atatagtigg
                                                                      420
ctactgcata cetttateag agetgteete tettegtegt caaggacatt aagetgacat
                                                                      480
cgtctgtcca gcaggagttl tactacttct gaattercat tggcagaggc cagatgtaga
                                                                      540
gengteetat gagagtgaga agoettttta ggaaattgta gtgeactage tacageesta
                                                                      600
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82888848
                                                                      668
      <210> 368
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<211> 1512

<212> DNA

<213> Nomo sapien

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                                                                         60
 ttemascaga tiggasacce ggagttacch getagttegt gasactggtt ggtagargeg
                                                                        120
 atetettige tactactege ttetectege tetraaaage agategiget tgagettgat
                                                                        180
                                                                        24 D
 tocatgroup eterttotto tetemagaag coattteeto tomagaagcaa gateegcaag
                                                                        300
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ggagaccacg argactutgr tatgaagaca otcaggagra agatgggcaa gtggtgccgu
                                                                        360
cactgotter cotyctgrag ggggagtygr aagageaaco tgggcyctto tggagaccar
                                                                        420
gargaytoty ctatgaogac actoaggaac oogatgggca ogtggtgetg coortgette
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ccctgctgra gggggggcrg caagegcaeg gtgggrcgctt ggggagarta cgatgeragt
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goetteatgg ageccaggta coacgtecgt ggagaagate tggacaaget coacagaget
                                                                       600
gcctygtggg gtazagtcco cagaaaggat ctoztcgtca tgctcaggga cactgacgtg
                                                                       66D
waraagaagg acaaggaaaa gaggactgct ctacatctgg cototgocaa tgggaattca
                                                                       720
gaaqtagtaa aactcetgot ggacagarga tgtcaactta atgtccttga caacaaaaag
                                                                       780
aggaragete tgayaaagge egtacaatge caggaagatg aatgtgegtt aatgttgetg
                                                                       840
gaacatggca Otgatecaaa tattocagat gagtatggaa ataccartot reactayget
                                                                       900
rtctayaatg aagataaatt aatggccaaa gcactgctct tatayggtgc tgatatcgaa
                                                                       960
tcaammaaca aggtatagat ctactaattt latetteaam alaetgmaat geatteatt,
                                                                      1020
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21B4

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                                                                       360°
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                                                                       420
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<213> Homo mapien

<400> 375

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<213> Homo sapien

<400> 376

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295
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Ser Net Leu Phe Leu Val Ilc Ile Met
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Trp Thr Ser Ser Thr Glu Leu Pro Trp Trp Gly Lys Val Pro Arg Lys
Asp Leu Ile Val Met Leu Arg Asp Thr Asp Val Asa Lys Xaa Asp Igg
                            40
Gin bys Arg Thr Ala Leu Ris Leu Ala Ser Ala Asn Gly Asn Ser Glu
                       55
Val Val Lys Lou Xaa Leu Asp Arg Arg Cys Glo Leu Asp Val Leu Asp
                                        75
Asn Lys Lys Arg Thr Ala Leu Xaa Lys Ala Val Gln Cys Gln Glu Asp
Glu Cys Ala Leu Met Leu Leu Glu Dis Gly Thr Asp Pro Asn Ilo Pro
                               105
Asp Glu Tyr Gly Asn Thr Thr Leu His Tyr Ala Xoz Tyr Asn Glu Asp
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Lys Leu Met Als Lys Ala Leu Leu Leu Tyr Gly Ala Asp Ile Glu Ser
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Lys Asn Lys Val
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Pro Cys Cys Arg Glu Ser Gly Lys Ser Asn Val Gly Thr Ser Cly Asp
                          40
His Asp Asp Ser Ala Met Lys Thr Len Arg Ser Lys Met Gly Lys Trp
Cys Arg His Cys Phe Pro Cys Cys Arg Cly Ser Gly Lys Ser Asn Val
                    70
Gly Ale Ser Cly Asp His Asp Asp Ser Ale Met Lys Thr Leu Arg Asp
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85 90 Lys Met Gly Lys Trp Cys Cys His Cys Phe Pro Cys Cys Arg Gly S ${\bf r}$ 105 Gly Lys Ser Lys Val Gly Ala Trp Gly Asp Tyr Asp Asp Ser Ala Phe 120 Met Clu Pro Arg Tyr His Val Arg Gly Glu Asp Lou Asp Lys Leu His 135 Arg Ala Ala Trp Trp Gly Lys Val Pro Arg Lys Asp Leu Ile Val Met 150 155 Leu Arg Asp Thr Asp Val Asm Lys Lys Asp Tays Glm Lys Arg Thr Ala 165 170 Leu His Leu Ala Ser Ala Asn Gly Asn Ser Glu Val Val Lys Leu Leu 185 bow Asp Arg Arg Cys Gin Lou Asn Val Leu Asp Asn Lys Lys Arg Thr 195 200 Ala Lou lie Lys Ala Val Gin Cys Gin Glu Asp Glu Cys Ala Lou Met 215 Leu Leu Clu His Gly Thr Asp Pro Asn Tle Pro Asp Glu Tyr Gly Asn 23Ú 235 Thr Thr Lou His Tyr Ala Ile Tyr Asn Glu Asp Lys Leu Met Ala Lys 245 250 Ala Leo bed Leo Tyr Gly Ala Asp Ile Glu Ser Lys Asn Lys His Gly 265 Leu Thr Pro Leu Leu Leu Gly Val His Glu Glo Lys Gln Gln val Val 280 285 Lys Phe Len 71c Lys Lys Lys Ale Ast Len Asn Ala Len Asp Arg Tyr 295 Gly Arg Thr Ala Leu Ile Leu Ala Val Cys Cys Gly Ser Ala Ser Ile 315 Val Ser Leu Leu Glu Glu Asn Ile Asp Val Ser Ser Gin Asp Leu 325 33D Sor Gly Gln Thr Ala Ary Glo Tyr Als Val Ser Ser His His His Val 345 Ilo Cys Gln Leu Leu Ser Asp Tyr Lys Glu Lys Cln Met Leu Lys Ile 360 365 Ser Ser Glu Asn Ser Asn Pro Glu Asn Val Ser Arg Thr Arg Asn Lys 375 380 Pro Arg Thr His Met Val Val Glu Val Asp Ser Met Pro Ala Ala Ser 390 395 Ser Val Lys Lys Pro Phe Gly Leu Arg Ser Lys Met Gly Lys Trp Cys 405 Cys Arg Cys Phe Pto Cys Cys Arg Glu Ser Gly Lys Ser Asn Val Gly **£25** Thr Ser Gly Asp His Asp Asp Ser Ala Mct Lys Thr Lew Arg Ser Lys 44D Met Gly Lys Trp Cys Arg His Cys Pho Pro Cys Cys Arg Gly Ser Gly 455 Lys Ser Asn Val Gly Ala Ser Gly Asp His Asp Asp Sor Ala Met Lys 470 475 Thr Lou Arg Ash Lys Met Gly Lys Trp Cys Cys His Cys Phe Pro Cys 485 490 Cys Arg Gly Ser Gly Lys Ser Lys Val Gly Ala Trp Gly Asp Tyr Asp 505 Asp S r Ala Phe Met. Glu Pro Arg Tyr Hig Val Arg Gly Glu Asp Leu 520

	530	l				535					540)			в абр
595					550	1				555					s Gln 560
Lys	Arg	Thr	· Ala	Leu 555	His	Leu	Ale	ser	Ala 570		Gly	ASr	'i S G1	Gl:	גאע נ
Val	Lys	lieu	Tien 580	Len	Asp	Arg	yrg	Cys 585		г гел	A Rn	Va]	Le.	Авј	Agn
		595)				600					605	Gli	i Aej	ւ գյա
	630					615					620				Q3A c
Gl11 625	Туг	G1.y	Aan	Thr	Thr 630	ГБЛ	нis	Tyr:	Ala		Tyr	Ası	Cle	, yst	Lys
	Met	e í a	ГЛЗ	Ala 645	Leu	Leu	Leu	Тут			Авр	Lle	Glu		640 Lys
ABn	Lуя	His	660	Гсл		Pro	Lev	հ e ս 665	650 Leu	ßЗУ	val	His			Lys
៤០	Gln	Val 675	Vel		Phe	Ъeu	11e 680	ft.À'à	Lys	Lye	Ala	Asn 685	670 Leu	Авл	Ale
Гъп	Asp	Arg		Gly	Arg	Thr		Leu	Ile	Leu	Ala 700	Ve J	Сув	Сув	Gly
Ser	Ala	Ser	Ile	Val	Ser		Leu	Len	Glu	Cln	ABD	Ile	Asp	Val	Ser
705					710					715					72N
				725	Сĵ				730					725	
R1.9	Hie	Hia	Val 740	Ile	CAE	Gln	Гал	Նе 145	Ser	Asp	Тух	Lув		Lys	Cln
Met	Leu	lys 755	•	Ser	Ser	GI.v	A9n 760		Asn	Pro	Olu	Gln 765	750 Asp	Γ¢λ	Lys
	770				Glu	775					780	fer			
AR2					Ser 790					795					800
				BQ5	Glu				810					R15	
			820		'l'hr			825					830		
		835			Arg		84Ú					845			
	85U				Glu	855					BED				
865	lyr	ГÀЯ	Glu	гàв	Gln 870	Met	Pro	ГÀS	Tyr	Ser 875	Ber	Glu	Asn	ser	
Pro	31 u	Gln	qaÆ	1.eu 885	Lys	Leu	Thr	Ser	Gly 890		Glu	Ser	Gln	Arg 895	leu Leu
Glu	Gly	Ser	ຜີ1ນ 900	Asn	Gly	Cln	PΥD	Glu 905		Glu	пвÁ	Phe	Met 910	Ala	lle
Glu	៥1ប	Met 915	lys	Lув	His	Gly	Ser 920		His	Val		Phe 925	Pro	Glu	ΛRΛ
Leu	Thr 930	Asn	Gly	Aln	Thr .			αeA	Gly	Asp .	ASP Uee	Oly	Leu	Ile	Pro
Pro 945	Arg	iys	Ser	Arg	Thr 950		ឲ្យ	Ser		Gln 955	Phe	Pro	Авр	Thr	Glu 960
ABD	Glu	Glu	Tγr	Hie	Ser .	ysb	Ģl.μ	Oln .	Asn	yeb	The	Gln	Lув	Gln	Phe

				965					970					975	
Сув	Glu	Glu	980 GJn		Thr	01y	Ile	ьел 985		Asp	Clu	1le	<u> </u>		His
Glu	GΣν	Lys 995	Glo	Ile	Glu	Val	Val		ЪУS	Met	Аэл	Ser	Glu		Ser
Leu	Ser		ьув	Lyr	Glu	lys 101		Ile	Len	His	Clu 102	ÀΒΩ		Thr	Leu
Arg 102		Glu	lle	Als	Met 103		Arg	Гъп	Glu	I eu 103	Asp		Net.	Inys	Нів 104
Gln	Ser	Gln	Leu	2ro 104	Arg		His	Жet	Val 105	Val		Val	yeb	Ser 105	Met
Pro	Ala	Ala	Ser 106		Val	Lув	Lys	Pro 106	Phe		Leu	Arg	Ser 107	Lys	Met
Gly	Lys	1'rp 3.07!	Сув	-	Arg	Сув	Phe 108	Pro		Сув	Arg	Glu 108	Şer		Гув
Scr	А вл 1090		Gly	Thr	Ser	01y	Asp	His	Авр	Asp	Ser 110	Ala		ГУз	Thr
Նես 110:	yrd Y	Ser	ГЛВ	Net.	Gly 111		Тгр	Сув	γrg	Н.is 111.	Cys	Yhe	Pro	Сув	Сув 112
Arg	Gly	Scr	Gly	1ув 112		Asn	Val	Gly		Ser		Asp	Hie	Asp 1135	Авр
Ser	A.l.a	Met	Lys 114("בתנ" ס	Len	Arg	Asc	lув 1145	Met	Gly	Lys	Тгр	Сув 1150	Суя	His
СЛВ	Phe	Pro 1155		Сув	Arg	GJA	Se r	Gly D	Lys	Ser	Lys	Val 1369	Gly		Trp
Gly	Л ар 1170		Asp	Asp	Ser	Ala 117		Met	Glu	Pro	Arg 1180		Нів	Val	Ary
Gly 1185		увр	Leu	Aup	Lys 1190		His	Arg	Ala	Ala 119!		Trp	Gly	lys	val 120
Pro	Arg	ГÀВ	C :2A	Leu 1209		Val	Met	Pen	Arg 1210	Asp		ysb	Vel	Asn 1215	Lys
Lys	Asp	ГÀS	Gln 1220		Arg	Thr	Ala	Len 1225		Leu	Ala	Ser	Ala 1230	Aun	
Asn	Ser	Glu 1235	Val	Vel	ГЛЯ	Leu	Leu 124(Leu)	Aep)	Arg	Arg	Сув 1245	Gln		Aen
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01n 1265		Авр	Glu	Cys	Ala 1270		Met	Leu	Leu	Glu 1275		Gly	Thr	•	Pro 128
αeA	IJē	Pro	Yab.	Glu 1285	Тут	Cly	Aan	Thr	Thr 1290		His	Tyr	VJS	11c 1295	
			1300)				λla 1305	,				1310	1	-
		1315	j				1320					1325			
His	Ģlγ 1330	ც), უ	гув	Gln	Gln	Val 1335		Γλa	Phe	Leu	Ile 1340		Lye	Lys .	Aĺe
1345	i				1350)		Gly		1355	•				136
Val	Сув	ር'ye	Gly	ser 1365		8 ÷ ī.	Ile	Val	Ser 1370		Lcu	Leu			Авл
			1380	1				Ser 1385					Arg 1390	Glu '	Tyr
Ala	Val	Ser 13 9 5	Ser	нів	Hís	His	Val 1400	Ile	Сув	Gln		leu 16D5	Ser	Asp '	Туг

Lys Glu Lys Gln Met Leu Lys Ile Ser Ser Glu Asn Ser Asn Pro Glu 1.415 1420 Glm Asp Leu Lys Leu Thr Ser Glu Glu Glu Ser Gln Arg Phe Lys Gly 1430 1435 Ser Glu Asn Ser Gln Pro Glu Lys Met Ser Gln Glu Pro Glu Ile Asn 1415 1450 Lys Asp Gly Asp Arg Glu Val Glu Glu Glu Met Lys Lys Hig Glu Ser 1465 ARD ARD Val. Gly Lou Lou Glu ArD Leu Thr Arm Gly Val Thr Ala Gly 1475 1480 1485 Aso Gly Aso Aso Gly Leo The Pro Gln Ary Lys Ser Arg Thr Pro Glo 1495 1500 Asn Gln Gin Phe Pro Asp Asn Glu Ser Glu Glu Tyr His Ary Ile Cyr 151D 1515 Glu Leu Val Ser Asp Tyr Lys Glu Lys Gln Met Pro Lys Tyr Ser Ser 1525 1530 Glu Asn Ser Asn Pro Olu Gln Asp Leu Lys Leu Thr Ser Glu Glu Glu 1540 1545 Ser Gln Arg Leu Glu Gly Ser Glu Asn Gly Gln Pro Glu Lys Arg Ser 1555 1560 1565 Gln Glu Pro Glo Ile Asn Lys Asp Gly Asp Arg Glo Leu Glo Asn Phe 1575 158D Mot Ala Ile Glu Glu Met Lys Lys His Gly Ser Thr Ris Val Gly Phe 1590 1595 Pro Glu Asn Leu Thr Asn Gly Ala Thr Ala Gly Asn Gly Asp Asp Gly 1605 1610 Leu Ile Pro Pro Arg Lye Ser Arg Thr Pro Glu Ser Gln Gln Phe Pro 1620 1625 163D Asp Thr Glu Asn Glu Glu Tyr His Ser Asp Glu Gln Asn Asp Thr Gln 1635 1640 1645 Lys Gln Phe Cys Glu Glu Gln Asn Thr Gly lie Leu His Asp Glu Ile 1655 1660 Leu Ile His Glu Glu Lys Gln Ile Glu Val Val Glu Lys Met Asn Ser 1670 1675 Glu Leu Ser Leu Ser Cys Lys Lys Glu Lys Asp Ile Leu His Clu Asn 1685 1690 Ser Thr Lev Arg Glu Glu Ile Ala Met Lrw Arg Lev Glv Lev Asp Thr 1700 1705 Met Lys His Gln Ser Gln Leu 1715

<210> 379

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<212> PRT

<213> Homo sapien

<400> 379

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 Val
 Asp
 Ser
 Met
 Pro
 Ala
 Ala
 Ser
 Ser
 Val
 Lys
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01A	УJа	Ser	Gly	лв р 85	ніс	Asp	Asp	Ser	Ala 90	Met	Гуя	Thi	. Len	Ary 95	Aso
ГVя	Met	Gly	Ъув 100		Cys	Сув	His	Cys 105	-	Pxc	Сув	Сув	Arg	Gly	Ser
Gly	Lув	Ser 115		Val	ចរ.y	Ala	Trp 126		Asp	Tyr	Asp	Авр 125	Ser		Iље
Mot	Glu 130	_	Arg	тут	Hi.s	Val 135		Gly	Glu	Asp	Leu 146	Авр		Lièu	His
Arg 145		Ala	Тгр	Trp	Gly 150		Val	Pro	λrg				Ile	Val	
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Leu	His	Leu			Ala	Asn	Gly		170 Ser	0 1u	Val	Val		175 Iieu	
Leu	Авр		180 Arg	СУВ	GLA	læu	Aen	185 Val	Peri	Asp	Авп	-	190 Lys	Arg	Ttox
Ala	Len 210	195 Ila	Lye	Ala	ſsv		CÅ8 SDØ	Gln	Glu	Asp		205 Сув	Ala	Leu	Met
Leu		Glu	Ris	Gly	Thr	215 Asp	Pro	Asn	Υle	Pro	220 Asta	B)u-	טעני'	Glv	λan
225					230					235	_		_	_	240
Thr	Thr	Leu	Kis		ala	IJę	Tyr	Asπ		yeb	Lyg	Leu	Met		Lys
Ala	Leu	Leu	Lieu	245 Tvr	Glv	Ala	Agp	Tle	250 (30	Ser	Tare	Zen	T.vo	255 H10	Glad
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		275					Val 280					285			
ГÀв	290 Phe	гел	Ile	ľĀŝ	ГУя	Lys 295	Ala	Aen	rea	aeA	Ala 300	Leu	yeb	Arg	Tyr
305					310		Уја			315					320
				325			Άsπ		330					335	
			340				Tyr	345					350		
		355					Tyr 350			_		365		-	
	370					375	Glu				380				
385	Glu	Ser	Gln	руá	Plie	Lys	Gly	Ser	Glu	Aan 395	Ser	Ğln	Pro	Glu	Lys 400
	Ser	Gln	Glv	Pro 405	- "	Ile	ABD	Lys	A9p 410		Asp	Λrg	Glu	Val	
Glv	Glu	Met	Ъуя 420		His	ផ្លាប	Ser	Asn 425		Val	Gly	Leu	Lau 430		Aen
Len	ፐስፕ	Asn 435	Gly	Val	'l'br	λla	Gly 440		Gly	Asp	ΩΩA	01y 445		Ile	Pro
G].N	Arg 450	Гув	Ser	Arg	Thr	Pro 455	Clu	Asπ	Gln	GJV	Pinc 46D	•	Asp	Agn	Glu
	Glu	Glu	Tyr	Hig	Arg	11	(,Às	Glu	Lev	Væl		Авр	Tyr	Lγg	Glu
465	47	ha		•	470	_	_		_	475		_			480
				485			Ser		490					495	-
Lieu	ГÅВ	Leu	Thr	Ser	ĠΊŲ	Glu	Gl u	Ser	Gln	yrd	Leп	Glu	Gly	Ser	Glu

500 505 Agn Gly Glo Pro Glo Leo Glo Asn Pho Mot Ala Ile Glo Glo Met Lyg 520 Lys Ris Gly Ser Thr His Val Gly Phe Pro Glu Asn Leu Thr Asn Gly 535 Ala Thr Ala Gly Asn Gly Asp Asp Gly Dau Ile Pro Pro Ary Lys Ser 555 Arg The Pro Glu Ser Gln Gln Phe Pro Asp The Glu Asn Glu Glu Tyr 565 570 His Ser Asp Glu Gln Asn Asp The Gln Lys Gln Phe Cys Glu Glu Gln 563 Asn Thr Gly Ile Leu His Asp Glu Ile Leu Ile Bis Glu Glu Lys Gln 600 ile Glu Val Val Glu Lys Met Asn Ser Clu Leu Ser Leu Scr Cys Lys 615 Lys Glo Lys Asp Ile Leu His Glu Asn Sor Thr Leu Arg Glu Glu Ile 6.30 635 Ala Met Leu Arg Leu Glu Leu Asp Thr Mct Lys His Gin Ser Gln Leu 645 650

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<211 > 671

<212> PRT

<213> Homo sapien

<400> 380

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225					230					235	,				240
Thr	Ttir	Leu	His	1yr 245	Ala	Ile	ТУI	` Asc	Glu 250		Lys	Leu	i Met	: Ala 259	ь Тук
			26 D					265					270)	e Gly
		275					280	1				285	i		. Val
	290					295					300	l			Tyr
305					310					315					1le 320
				325				•	330					335	
			310					Ala 345					350		
		355					360					365			
	370					375		Gln			380				
385					390			Sec		395					400
				405				Lya	410					415	
			420					Ав п 425			_		430		
		435					440	ABD		•		445			
	45D					455		Asn			46D				
465	GIU	GIU	īvi	UIB	470	116	Cys	Glu	теп	475	ser	qsA	Tyr	ГÅК	Մlս 480
				485				Glu	490					495	Asp
			500					Ser 505					510		
		S15					520	Gln				525		_	•
	530					535		Met			540			_	•
545					550			Pro		555					560
				565				Leu	570					575	-
			580					Asp 585					590		
		595					600	Lys				605			
	610					615		leu			620		_		
Glu 625	Val	Val	Glu	ГÀВ	Met 630	Aen	Ser	Glu		Ser 635	Pen	8 er	Сув	Lys	-
	Lys	qza	Ile	leu 645		Glu	Asn	Ber			Arg	Olu		11e 655	Ala Ala
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gageettgit recicigity gaetereigr coatatiott gigggagigg gitolggaga 960
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agagatggag tigentaggd agitatiggg gecaatotti oteacigigi cincootect 1080
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gcattecces austggatea aggacecoat opcasecaac rectgestse occtstecce 1260
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tgaagtooto egacotyagg ttooctagag btoeeaceaga tacagcatgg tocagagtec 2400
cagatgiaca aaaacaggga ticabbacam aicceatcit tagdaigaag ggictggcab 2460
ggcccaaggc cccaaytata teaaggcart tgggcagaac atgccaagga atcaaatgtr 2520
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gcagggctgc Ugaqtcaacc ttttattgta cegggqatga gggaaaggga gaggatgagg 264D
wagecedeet ggggattigg tilggtettg tgateaggig gictatgggg etalegetad 2700
easgaagaat CCaquaatag gggcacattg aggaatgata ctgagcccaa agagcattca 2760
atcattgitt tattiggett Cituteaeae cattggigag ggagggatta ccarcology 2820
gitatgaage tegityamoo cooracacat agomodygag atatgageto madagittoi 2000
tageentaga gatteacago coagagengg nggaegenge acacemtgea ggatgacaty 2940
ggggatgcgc tcgggattgg tgtgaagaag caaqgactgt tagaggcagg ctttatagta 3000
acaagacggt ggggcaaact ctg6tttccg tgggggaatg tcatqqtctt gctttectam 3060
gttttgagac tggcaggtag tgaaactcat taggctgaga accttgtgga atgcagctga 3120
cocancigat agasgaasta gccassiyyy ageetticaa agiyytta ggacatatot 3180
ggcaagatit tgtggcddto otggttacag atactgygge ageaataaa actyoztett 3240
gttttuagac ottobbeasa aasaaaaaa anaagttt.
<210> 3B3
<211> 155
<212> PRT
<213> Homo sapiens
<400> 3B3
Met Ala Gly Val Arg Asp Glo Gly Glo Gly Ala Arg Trp Pro His Thr
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Gly Lys Arg Gly Pro Leu Leu Gln Gly Leu Thr Trp Ale Thr Gly Gly 25

His Cys Phe Ser Ser Glv Glu Ser Gly Ala Val Asp Cly Ala Gly Glo 40

Lys Lys Asp Arg Ala Trp Leu Arg Cys Pro Glu Ala Val Ala Gly Phe

Pro Leu Gly Ser Asp Cys Arg Glu Gly Gly Arg Gln Gly Cys Gly Gly

Ser Asp Asp Glu Asp Asp Leu Gly Val Ala Pro Gly Leu Ala Pro Ala 85

Trp Ala Len Thr Gln Pro Pro Ser Gln Ser Pro Gly Pro Gln Ser Leu 100 105

Pro Ser Thr Pro Ser Ser Ile Trp Pro Gln Trp Val Ile Leu Ile Thr 120

Glu Leu Thr lle Pro Ser Pro Ala His Gly Pro Pro Trp Leu Pro Asa 130 135 140

Ala Leu Glu Arg Cly His Leu Val Arg Glu 145 15D

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 <212> DNA
 <213. Homo sapiens
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ggggaagggt coefffigea tigedeagtg ddatazecat gagractect ciarcatggt 160
telgeeleet ggenaagnag guiggittge aagaalgaaa igaalgatte tacagulagg 240
actionactit generagene gtettgenet odenttigen ggattegtet gigeneatge 300
ctctgtagag agcagcattic cumpggacet tggaaacagt tggcactgta aggtgcttgc 360
tocccaages assections aggightgle atggtgaans egicticout offinings 420
cettettatt tatgigases actgittgic tettitigis tettittaa actgimagt 480
tosatiguna amatgmatat catgosasta aattatgoga tittititu aangtassa 540
SERESES SECONOSES
                                                                   557
<210> 385
<211> 337
<212> DNA
<213> Nomo sapilens
<400> 385
thoccoppin atgracage gasgacacet tractatect typingggot gatroctta 60
gtttetetag cageagatgg gutaggagga agtgaceesa gtggttgaut cutatgtgem 120
tetcasages storgetgre tregagiang garacateas caetesigns tigitgatea 180
adaugtegag gigetiteen teagetaaga agreetiage aasagetega atagactiag 240
tateaganag grocagitte egraceasea entgelight ecotglegig glotygatet 300
Obtigguese essiticere tittecadat coegges
<210> 386
<211> 300
<212> DNA
<213> Homo Bapiens
<400> 386
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gcgaccttgg corgaagget etagcaagga cocarrgare enagcegogg cggcggegge 180
gragaritig cocautatat gagageagage gaactacata tecaragaea gacayeaaa 240
atatragect tegetgecas gaccatagae egatercaga getalagtat aareteage 300
<21D> 387
<211,> 537
<212> DNA
<213> Homo sapiens
<400> 387
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concetering indicates atcanent atmantings camingette thorougage 120
tgeaccagga coggettetg ggragetgaa agggaaagg aggraaggac coogtetete 180
ссасудатур дужувручен дужурадаес садсожадку cottttecte жусастуану 240
gagggggett gttteeette eetennggeg acampeteen gggragggel gteeetet.gg 300
```

```
peggecoage actificing academic tipolycipe teenginging gggatcatem 360
cttacccacc coccaagttd aagaddaaat cttccagctg cocccttogt gtttccctgt azu
gtttyotgta gotgggcatg tetecaggsa ccaaggaayee etcageetgg tgtagtetee 480
ctgaccettg theattecht aegletammg atgatgaact tesaasassa meanmaa
<210> 388
<211> 520
<212> DNA
<213> Komo sapiens
<400> 388
aggataatti tiaaannaat (Abbiqoodo aqacaaecaa anaasabagg daatgicatg 60
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gtttgaagat tgcctcttct ecagettete agaattgtgt tatttceett qccaagtqaa 180
ggacccoote cocameatge eccagercar contampeat ggtecettgt carcaggeam 240
ccaggaaact gctacttgtg geddtddca gagaccagga gggtttggtt agctcacagg 300
acticoccom occompanya tragcateor atactagaet catacteaae teaactagge 360
testactess tigatggita tiagacastt cestitetti siggitatia taaseagasa 420
abblittocko krotoattao cagtaaaggo tohtggbato trretgrigg aatgathtot 480
atgaactigt cttattttaa tggtgggbtt tttttctggt
                                                                   52D
<210> 389
<211> 365
<212> DNA
<213> Homo sapiens
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gagttaagge tggattteag atdigcolgg ttoompooge agtgtgccot otgeteener 120
ABRIGACTION CARRESANT CACCARGERE ELECARRESA 2909100185 RAGERELLS 180
aggoriated coageister tigisticos lotogorogo eigicotean agginagaet 240
cccaggaaac ctbcagacta ccttoctctg ccttcagcaa ggggcqttgc ccacattctc 300
tyagggteag tggaagaacc tagacteeca ttgctagagg tagaaagggg aagggtgetg 360
gggag
<210× 390
<211> 221
<212> DMA
<213> Homo sapiens
<220≻
<221> misc_!eature
<222> (1)...(221)
<223> n - A, T, C or G
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tgestetica tectggeous gastratorg teaggaaagt ggggarggas essatetgea 60
tacacggntt ctcatgggtg tggsacalct ctycttgcgg tttcaggaag gcctotggct 120
gctctangag tctgancaga atrottgacc cantatgaca maaggaaagg cggagcttat 180
traaagteta gagggagtgg aqgagttamg getggattte a
                                                                  221
<210> 391
<211> 325
<212> DNA
<213> Homo sapiens
```

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<220>
 <:221> misc_feature
 <222> (1)...(325)
 <223> n ~ A.T.C or G
 <400> 391
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cuetagonec cageetagas angolecitos catetaceas casteagang aggegaços 120
tageraggge antgothees seageragte ennetacest catginaces ggtgngetet 180
neauttugat utreamager chacceaton tagttetget ctoccaeegg mtaccagece 240
cartgreeag gaatectaes geragtacer tgtcccoacg trtctaccts cosstacgat 300
gagacotocy gotactacta tgaco
                                                                    325
<210> 392
<211> 277
<212> DNA
<213> Homo Bapieng
<220>
<221> misc_feature
<222> (1) ... [277]
<223> D - A,T,C OF G
<400> 392
atailgutta actuetteet tiatatetti taacattiin aiggngaaug giinacatet 60
agtetractt nggenagngs etectaettg agtetettee eeggeetgnn ecagtngsaa 120
antaccenge adognostgo ottaaneedu nootgetton tegestronto eetgentegon 180
twomstgeac racectates astacatgat grtgtaggat tamagtetea cagtuggegg 240
ctgaggatac agnyeogegt cctgtgttgn tyyggaa
                                                                   277
<210> 393
<211> 566
<212> DNA
<213> Homo sapiens
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ttgccgggaa cactgcagag acaatgctgt qaqtttccaa ccttagccca tetgcgggca 180
gagaaggtot agtitgtoca toagoattat catgatatoa genetggtta cttggttaag 240
gaggggtcta ggagatetgt ecettttaga gacacettae ttataatqua gtatttggga 300
gggtggtttt caaaagtaga aatgtootgt attoogatga toutcetgta aacattttat 360
cattiattea textecetge etgigiciat tattatatic abatetetae geiggeaact 420
ttotgeetra atgittacty igeetrigit titigotayti igigitgitg aaaaaaaaa 480
cattutorgu orgagettea attitegtou aaagttatti taatutata aattaaagu 540
ttttgcctat ceedamaaa aamaa
                                                                  566
<210> 394
<211> 384
<2125 DNA
<213> Nome Rapiens
<2205
<22}> Nisc_feature
```

```
<222> (1)...(384)
<223> n = A,T,C or G
c400> 394
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tguaaattng garcgggcca aggctgyaet getggagcgt gtgaagquge tacaggccna 120
gcaggaggar cgggetttma ggagttttam gctgagtgto detgtagacc ccammtacca lan
toucaagatt ategggagaa agggggdagt aattacccaa atccggttgg agcatgacgt 240
gaacatecag Utbectysta aggacgatgg gaaccagdoo caggaccaaa Utaucateac 300
ayygtacqaa magaacarag aagktqoodg ggatgobata otgagaattg tgggtgaact 360
tgagcagatg gtttdtgagg acgt
                                                                   384
<210> 395
<211> 399
<212> DNA
<213> Homo sapiens
<400> 395
ggcaaaactg tglgacctda atmagacctd gcagabddan ggtcaagtat dagaaqtgac 60
totgacotty gactocaaga cotacetoau cagoetgget atattagatg atgagecagt 120
tatcagaggi ticatcatts Ogganatigi ggagictaay gaabicaigg coictyaagi 180
attcacetot ttocagtaco otgagitoto tatagagito octaececay gozgazingg 240
congetactt gtotgcastt giftottoma gamtecottg governoott igactgeogt 300
caagiticict utggamaged igggdaldid otdadtadag adeldigadd alggganggi 360
geageetggt gagarester satteesaat asaatgese
                                                                   399
<210> 396
<211> 403
<212> DNA
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1)...(403)
<223> n = A,T,C or G
<400> 396
tygayttnic agigraaaca agccataway citcagtagc aaattactyt cicacagaaa 60
gacattttca activigetr cagcigriga taaaacaaat caigightta gottgacicc 120
agacaaggae aacctgttcc ttcataacte tetagagaaa aaaaggagtt gttagtagat 180
actaaaaaaa gtyyatgaat aatotggata titticotaa aaagattoot igamacacai 240
taggaaaatg gagggcctta tgatcagaat gctagaatta gtccattgtg ctgaagcagg 300
gttlagggga yggagtgagg gataasagaa gyaazaaaag aagagtgaya aaacrtattt 360
ateasagrag gractateas toaatqttag gccctgctet ttt
<210× 397
<211> 100
<212> DNA
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1)...(100)
<223> n = A,T,C or F
```

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<400> 397
artaginnag tgiggiggas tiogragedeg ngingedota naanoosidi otelagdasa 60
todatocoog otootggttg ginacegeat gactgaceaa
                                                                    100
<210> 398
<2115 27B
<212> DNA
<213> Homo sapieng
<220×
<221> misc_feature
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<223> n - A,T,C or G
<400> 398
graggregegt rearrances temperages consensing agragases temperage an
ccacctgqac atctggaagt cagcggcctg gatgaaagag cggacttcac ctggggggat 120
teactactgt greingance qtgaggagag etggagggau agrgaggtgg ecluateatg 180
ctrogggdeg cucatocare tgtggmaglt detemaggag ttgdtactem ageccareg 240
ctatggccgc ttcattangt ggctcaacaa ggagaagg
                                                                   278
<210> 399
<211> 298
<212> DWA
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1)...(298)
<223> n = A,T,C or G
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acqqaqqtqq aqqaaqcqnc cctqqqatcq anaqqatqqq tcctqqcatt qaccncctcn 60
ggggtgeeng catggagkgo atgggegegg geetgggeoa eggeatggat cgegtggget 120
Cogagatoga gegeatggge ctggtcatgg accgcatggg ctccqtggag cgcatgggcu 180
ceggeatiga gageatygge cegetgggee tagaccacat ggeetecana attganegea 240
tgggggagae catggaggg attggctdtg gegtggagen cetgggtgee ggeatggg
<230> 400
<211> 548
<212> DNA
<213> Homo sapiena
<480> 400
adatements chicotoatt tranggiatg gengitionet testecerti ticotgoett 60
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raaagaarca cacqcttaga agggtaagag ggcaccctat gaaatgaaat qgtgatttrt 180
tgagtetett ttttecaegt ttaagggger atggcaggae ttagagttge gagttaagae 240
tgcagagggc tagagaatta tttcatacay gotttgagge caccoatgto acttatoong 300
tataccetet caccatedes tigiciacte tgatgcccec aagatgcaac tigggcageta 360
gttgggggg taattetggg cotttgttgt ttgttttaat tecttgggca teccaggaag 420
etttecagig atotoutauu atgggeeece ciccigggat caageeccic coaggeeetg 480
todddayedd eteetgeern agondadoog ettgeettgg tgotdagoed teedattggg 540
agcaggtt
```

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<210> 401
<211> 355
<212> DNA
<213> Homo Bapiens
<220>
<221> Misc_fcature
<222> (1)...(355)
<223> n ~ A,T,C or G
<400° 401
artgittera igitaighti Chadacattg ciaccinagh goldeiggan acttagobil 60
tgatgtetee aagtagteem cetteattta actettegam metgtateat etttgermag 120
taagagtggt ggcctatttc agctyctttg acaasatgac tggctoctga cttaacgtto 180
tataautgan tgtgotgaag caaagtgoog atggtgggg cgaagaagan aaagatgtgt 240
tttgttttgg actntctgtg gloccttoca atgrtgnggg tttccaacca ggggaaggyt 300
contitition tigocamping containment, pagementati ciarcategn totae
<210> 402
<211> 407
<212: DXA
<213> Homo sapiena
<220>
<221> misc feature
<222> (1)...(407)
\langle 223 \rangle \pi = A_i T_i C \text{ or } G
<400> 402
atggggcaag chggeteeug eaccaagacc cactggepta tgctgtcttc aagaeecca 60
totomostyc gytggcatar ataggctcas matmaaggaa tggagamama tatttcaagc 120
aastggssaa cagaaaaaa cagstgttgc actcctactt totgacaaaa cagactatgo 180
gaatamaquit damaaagaga aggacattac adaggiggic cigaccittig atdamictca 240
ttgcttgata ccaaccuggg ctgttttaat tgcccaaecc aadaggataa tttgctgagg 300
bugitggaget tetecerige agagagiese tgateterra asattiggti gagatglaag 360
gnigatitig cigaceecto citticigia gitteactos titocas
<210> 403
<211> 303
<212> DNA
<213> Ното варіелв
<220>
<221: misc_feature
<222> (1)...(303)
<223> n = A,T,C or G
<400> 403
cagtatital agrinoacty easagriagt agraggrang triraaator aggraccans 60
toctaagesa gagonatggo atggtaana tgcsaaagge gagtotggoo aatctacaae 120
tagagaacaa gacetactea geestgaaca aaaaggeaga cacesacatg gateteatgg lag
gggattggat attgtøattm tagageagga agatgacagt gategteatt tggcacaacm 240
Estadouas gasegasass cattatulas atamasetes attrigutass catgingasa 300
gga
                                                                    303
```

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<210> 404
 c211.> 225
 <212> DNA
<213> Homo sapiens
<400> 404
augigiaaci titaaaaatt tagaaaatte tagaaggaaag tagaggaaa 60
attgtleatg dactcattta cotttacatg gigaaagtto totottgato ctacatacag 120
acatttteca chogtgttto catagttgtt aagtgtatca gatgtgttgg geatgtgaat 180
ctccaagtgc otgtgtaata aatsaagtat ctttatttua ttrat
<210× 405
<211> 334
<212> DNA
<213> Homo sapiens
<220>
<221> migg feature
<222> (1) ... (334)
<223> n = A, T, C or G
<400> 405
gagetgttat metgtgagtt etactaggaa atcatemant etgagggttg totggaggae 80
ticastarac riconcocat agigaatoag citroagggg glodagioce toichtaut 120 .
Enstropedat decatgeess aggsagance tooctootty getracages (tototagge 18)
tteccagtgc ctccaggaca gastsggtta tgttttcagc tccatccttg ctgtgagtst 240
rtggtgcggt kytgeetera gettetgete agtgcttcat ggaeagtgte cageeeatgt 300
Catteterse tetetearng tggatectar cost
<210> 406
<2115 216
<21.25 DNA
<213> Homo sapiens
<22Ú>
<221> Mist_feature
<222> (1)...(216)
<223> n = A,T,C or G
<400> 406
tttcatacct aatgagggag ttganatnac atmnaacceg gaaatgcatg gatctcaany 60
gaaacaatca crcaataaac toggagtggc agactgacaa ctgtgagaca tycacttgct 120
achaearacs estituatet tgraccritg titictecaco tgtgggttat gaceasgaca 180
actgocamag mathiticaeg eeggaggact gocant
                                                                  216
<210> 407
<211> 413
<212 > DOKA
<213> Homo mapiens
<400> 407
gotgactigo tagnatoato tgeathqath qaagoacaag aacttratgo Obtgactcal 60
gtaaatgraa taggattaan maataaatti gatatraçat qqamacagar aaamaatatt 120
gtackacatt geaccragtg teagatteta vacctggeea etraggaage aagagttaat 180
cocagaggic tatgicciak igigitatgg casaiggaig toxiquacqi accitcatil 240
```

```
ggsaastt9t catttgtcca tgtgacagtt gatacttatt cacatttcat atgggcaacc 300
tgccagacag gagaaagtot toccatgita amagedattt attatotigt totootgica 360
tgggagttoc agammagtt aasacagama atgggeesgg ttotgtagta mag
<210> 408
<211> 183
<212> DNA
<213> Homo sapiens
<220>
<2215 misr:_feature
<222> {1}...(183}
<223> n - A,T,C or G
<400> 40B
ggagetoger ctraathoot comtotetat gitanomiat timatgiott Cignomiatea 60
thettaacta githateett aaagggetan nimiteetta actagieeet eestigigas 120
cattatectt coagtation colletatit tattiacted treetggets cocatgiant 180
<220> 409
<211> 250
<212> DNA
<2135 Homo sapiens
<220>
<221> misc_feature
c222> (1)...(250)
<223 or = A, T, C or G
<400> 409
cocacgratg ataegotott tatttctgta egtottgcta ggaast.catc auatctgacg 60
glggilliggg ggacrigeac emaccicoty tabitaetca gotticagit totoccocta 120
gteretertt rascascata ygaggatert cocctettt etgeteaegg cettatetag 180
gcttcccagt geocccagga cagcgtggge tatgtttace gegenteett gctggggggg 240
ggemtatge
<210> 410
<211> 306
<212> DNA
<21.3> Homo sapiens
<220>
<221> misc feature
<222> (1) ... (306)
<223> n = A,T,C or G
<400> 410
ggctggtttg caaqaatgaa atgaatgatt utacagctag gacttaacct tgaaatggaa 60
agtettgeaa teccatttg: aggateegte tgtgcacatg cetetgtaga gagcageatt 120
codeggaco teggaaacag teggaedigt daggigatig electroaaga cacalcolum 180
maggigitgi amiggigaam accgetteet tettinitge eesttettal temigigaac 240
nactygityg ottittigm athtititta aartygaaag ticauttyng aaaatgaata 300
tentge
```

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<210> 411
<211> 261
<2125 DNA
<213> Homo Bapiens
<220>
<221> misc_fcature
<222> (1)...(261)
<223> n = A, T, C \text{ or } G
<400> 411
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agatutttty tatttaagga ttctgagatt ttgcttgage aggattagat waggctgttc 120
tttaaatgic tgaaatggaa cagattteaa aaaaaaacco oocaatetag ggtgggaaca 180
aggauggaau yatgigaata ggcigaiggy caazamacca att.acccat cagitecage 240
cttctctcaa ggngaggcaa a
                                                                    261
<210> 412
<211> 241
<212> DNA
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1)...(241)
<223> n = A,T,C or G
<400> 412
gtteamtgtt acctgacatt tothommone occarteace gatgtatteg ttgcccagty 60
ggsacatacn agodtgaatt tggaasaaat sattetett cttgcccagg saatactacg 120
actyaettty atggetreac asacataace engtgtaaaa acagangatg tggagggeg 180
ctgggagatt toectgggta cattgaattc coassettacc cangcastta occayocase 240
                                                                    241
<210> 413
<211> 231
<212> DNA
<213> Homo Rapiens
<220>
<221> misc_feature
<222> (1)...(231)
<223> n = A, T, C or G
<400> 413
aactottaem atreaagiga etestetgig tgettgaate ritteemetg teleatetee 60
ctcatccang tututageac cttctctttg ttgtgaagga taatcamact gaacaacaaa 120
angittaete terteatity gaddetaama artetetint teetgagtet gagggeteem 180
agaatcotty aatcanttot regatostty gyucaccon atcaggeact t
<210> 414
<211> 234
<2125 DNA
<213> Homo aspiens
```

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<400> 414
artgtccetg esgcactgay cagaagetgg eggcacadeg caccagacac (cacagacag 60
guiggagetg assacatase coscietyte etggaggeac igggaugeet agagaagget 120
gtgagccang gegggeggt etteettigg catgggatyg ggatgaagte aggagagga 180
otggaccccc tggaagctga ttcaccatgg ggggaggtgt attgaagtcc tera
<210> 415
<211> 217
<212> DNA
<2135 Homo sapiens
<220>
<221> misc_feature
<222> (1)...(217)
<223> n = A,T,C or G
<400> 415
geataggath aagantgagt atotttteta cattettta actttetaag gggemettet an
caadadaday accaggtage aaatobddae tgetetaagg ntobdadcac caetttobda 120
carctageaa tagtagaabt emgteetaet tetgaggeem gaagaatggt temgmammat 180
antggettat aumazataac aattaageda mmtaatc
                                                                   217
<210> 416
<211> 213
<212 > DNA
<213> Homo sapiens
<220×
<221> misc feature
<222> {1}...(213)
<223> \pi = A,T,C or G
<400> 416
atgeataint adaqquaneet gretegetti taquaqueat etggnetget etetgeatga an
gguacagozg tamagetett testrocome amtemagane cutuccette agactathae 120
cgaatgcaag gtggttaatt gaaggccact eattgatgot caaatagaag getattgact 180
atattggaac agatggagts totactacaa aag
                                                                   213
<210> 417
<211> 303
<212> DNA
<213> Romo sapiena
<220>
<221> misc_feature
<222> (1)...(303)
<223> n = A,T,C or G
<400> 417
nagtetteag geocatouss gaagtteaca etggagagas gteatacata tqtactgtat 60
gtgggaaagg ctttactctg agttcammate ttcamgccca tcagagmgtc cacact.ggag 120
agaagccata Ceaatgcook gagtgtggga ayagcttcag gagggattco cattatcaag 180
ttcatctagt ggtccacace ggagagaaac cctataaatg tgagatatgt gggaagggct 240
trantrassg Utreptatott casatorsto ngaaggnooi cagtatanan aaacotttta 300
agt
                                                                   303
```

```
<210> 418
  <211> 328
  <212> DNA
  <213> Homo sepiens
  <220>
  <221> misc_feature
  <222> (1)...(328)
  \langle 223 \rangle n = A,T,C or G
  <400> 418
 tilttggngg legglegggeb gggaegggae angagtotoa otetgitgeb naggotggag 60
 typacaggra tgatrtegge teactacaac edetgeetee catgtecaag egattetigt 120
 genteagent teectotage tagaattaca ggcanatgee accaracrea getagtitt 180
 gtatttttag tagagacagg gtttcaccat gttggccagg ctggtctcaa actoctaacc 240
 teagngghna ggotggtotu azzetetga esteaagtga totgesease teagootees 300
 amagtgetan gattaraggr cgtgagcc
                                                                                                                                                     328
 <210> 419
 <2115 3B9
 <212> DNA
 <213> Homo sapiens
 <220>
 <221> misc_festure
 <222> (1)...(389)
 <223> D = A,T, D or G
 <400> 419
cobcotcase augmentata attemperation officeas described and estate 
acreetgage catggactgg agcetgadag gragrgtara contgetest gatettgetg 120
cttgtllcct ctctgtggct ccattcatag cacagutgtt geactgaggc ttgtgcagge 180
cgagcaaggc caagctggnt caasqagcaa ccagtcaact ctgccacggt gtgccaggca 240
cogettolec agreacease etcactoget enogeasate geneateagt tottotacce 300
tadaggtogg accasagggs atotigotitt otgasgtoot otgototato agecatmacg 360
tggcegccec tcnggctgtg tcgacgcgg
                                                                                                                                                    389
<210> 420
<211> 408
<212> DNA
<213> Homo sapiens
<$00> 420
gttoctecta actectgeca gaaacagete tectcaarat gagagetgea eccetreter 60
tggccagggc aqcaayeett ageettgget tettgttlet getttttte tggctagace 120
gmagtgtact agecaaggag tiqaaqtiig igaciitggi gitteggeat ggagaccgaa 180
gucceattya cacetticce actgaccaca taaaygaate ctcatggcca caaggattig 240
greaactear ceagetqgge atggageage attatgaact tggagagtat ataagawaga 300
gatatagasa attettgaat gagteetata ameatgases ggtllatatt egaageacag 360
angilgancy pacitifats abstightats acasecutys caageong
                                                                                                                                                  408
<210× 421
<211> 352
<212> DNA
```

```
<213> Nomo gapiona
<220>
<221> misc_feature
<222> (1)...(352)
-:223> n = A,T,C or G
<400> 421
geteaaaaat ettittaetg atnggeatgg etacacaate attgactatt acggaggeea 60
gaggagaotg aggeetggee tyggageert gtgeetactacta namgemeatt agattateem 120
ttemetgaca gaadaggtet tittigggte ettettetee accadnatmi mettgeagte 180
ctecttettg aagattettt gecagtigte intgleetan ceracaggig taganacaag 240
ggtgcaacat gaaktitetg titeglagem agtgcatgte teacaagttg gcangtetge 300
cockcogagt traitigggty titigtiteet tigageboom tgeattreet go
<210> 422
₹211≥ 337
<212> DNA
<213> Homo sapiene
<400> 422
atgecarcal getggeaatg cagegggegg tegaaggest gestatocag cocaspetgg &u
chateatega eggeascent teccedaagt teccedatece agregaageg geggteaagg 120
gegatageaa ggtgeeggeg ategeggegg egteaateet ggeegaggte ageeglyate 180
gtgaaatggo agcigtogaa tiqatotaco ogggttatgg caleggoggo caleagggot 240
atcogecaco ggtgckcotg geagochtgc agoggotggg googeogoog attoaccgac 300
gcttCttCcg coggtacggc tggcctatga aaattat.
                                                                   337
<210> 423
<211> 310
<212> DNA
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1)...(310)
<223> \pi = A,T,C or G
gctcamaant ctttttectq atatggcatg gctacaceat cattgactat tagaggccag 60
aggagaatga ggcctggcct gggagccctg tgcctactan aagcneatta gattatccat 120
teactgacag sacaggiett tittigggien tichteteca ceangalata ettgeaging 180
tecttottak agattettig gosattatet tigicatase comeagatat anasacmaga 240
gigoaacaig aaatitoigi ticgiagcaa gigoaigici caragitogio aagicigooc 300
tocgagttta
                                                                   310
<210> 424
<211> 370
<212> DNA
<213> Homo sapiene
<220>
<221> misc_featur
<2225 {1}...(370)
<2235 n = A,T,C or G
```

```
<400> 424
getraaaaat ettittaetg alaggeatgg etacacaate attgaetatt agaggeeaga 60
ggagaatqay quotggootg ggagccclist gcotactaga agcacattag attatccatt 120
eactgacaga anaggintit flitgggiest tetteteese eacgatatan tigeagicst 180
contections gattetting regitigatet tetentaere caragetyta gamacatect 240
ggttgaatet eetggsacte ceteattagg tatgasetus eatgatgeat tgestamagt 100
caccassints desambates resedition caddavese treatfatas readcadas 300
tengthegang
                                                                    370
<210> 425
<2Jl> 216
<212> DNA
<213> Nono sapiens
<220>
<221> misc_feature
<2225 [1]...(216)
<223> n=A,T,C or G
<400> 425
aattgetatn nittattity eeacteasaa taattaeeaa aaaaasaaa inttaaatga 60
taacaacnea acatcaaggn aaanamaaca ggaatggntg actntqcuta aatnggccga 120
anattateca thatnitians ggttgactte aggntacage amacagadas acatgeceag 180
gaggntatom gymcesetes atsintbaty aggagg
                                                                   216
<210> 426
<211> 596
<212> DMA
<213> Homo sapiens
<400> 426
cttecagtga ggateaccct gttgerccgg gccgaggtte tecattagge tctgattgat 60
tggcagtong tgatggaagg gtgttctgat catteegach gccccaaggg trgctggcca 120
gotetetgtt thgotgagtt ggeagtagga cotsatttgt taattaagag bagatggtga 160
gotgleettg tattttgatt aaccteatyg cetteecage acquetegga ttcagetega 240
gacatcacgg caacttttaa tgaaatgatt tgeegggcca ttaagaggca Cttoccgtta 300
ttaggcautt catcigcart gataacttet tggragetga getggtegga getgiggece 360
anacgracae thegettite ettigaget acaactetta atetthage eatgetigae 420
ggtggatgge ettttraget tteaccommt ttgractgcc ttggaagtgt agrcaggaga 480
atacartcan atactogram gertagagge cacagoagat greattggto tactgertga 540
gtoucyctgg tercatecea ggacetteca teggrgagta cetgggager egtget
<210> 427
<211> 107
<212> DNA
<213> Homo sapiens
<220>
<221> misc_fcature
<222> (1)...(107)
<223> n = A.T.C or G
<400> 427
gazgaattea agitaggitt atteaaaggg ettaengaga atectanaen caggneceag 60
```

```
Coogggagea geettamaga geteetgttt qaetgeeegg eteaggg
                                                                    107
<210> 428
<211> 38
<212> DNA
<2135 Homo sapiens
<220>
<2215 misc_feature
<222> (1)...(38)
<223> n = A,T,C or G
<400> 428
gaartterna ansangaett tätteartat tittacatt
                                                                   38
<21U> 429
<211: 544
DNA د212>
<213> Homo sapiena
<400> 429
Otttgctgga cggaataaaa ytgyacqcaa gcatgacct; Ctgatgaggg cgctgcattt ap
attgsagage ggotycagee etgeggites gattamaate egagaatugt atagaegeeg 120
Atatocaega actotigaag gadittoiga titatocaca albamateat oggitticag 180
ttiggalggi ggcldateac olglagasco igacilggeo glygolggaa lecaclogii 240
gcottocaut teagttacae eteacteauu atnoteteet ghuggetetg tyetgettea 300
agatactaag cocadattty agatgeagea gocatotoco ceaatteeto otgterated 360
tgatgtgcag ttmaaamatr tgrcctttla tgatgtectt gatgttctom temagcccac 420
gagittagit casagcagia ticagogati tcaagagaag tittitatti tigcittgac 480
acctcaacaa gitagagaga tatgcatato cagggattit tigccaggig giaggagaga 540
ttat
                                                                   544
<210> 430
<2115 507
<212> DNA
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1)...(507)
<223> n = A,T,C or G
<400> 430
cttatchcaa tygggctccc asacttggdt ytgcagtgga asctddgggg gaattttgam 60
gaacactgae acceatette caceregaes etetgattta attgggetge agtgagaara 120
gagcatcaat ttamamagct gcccagaatg ttntcctggg cagcgttgtg atctbtgccn 180
cottogtgac titatgezat geatcatget atticatace tastgeggga gitecaggeg 240
attenderag gatgttttta encetgiggg tiatgacaaa gacaarigec aaaqaainti 300
caageaggag gactgcaagt atatcgtggt ggagaagaag gacccamaam agacctgtto 360
tgtcagtgaa tggatamtut matgtgette tagtaqqono agggetence ggucaggeet 420
CattCtCctc tggcctctaa tagtCtatga ttgtgtagcc atgcctatca gtaaaaagat 480
ttttgagcaa &easaasaa заваава
                                                                   507
<210: 431
<211.5 392
```

```
<212> DMA
 <21.3> Ношо варівля
 <220×
 <221> misc_feature
 <222> (1)...(392)
<223> n = A,T,C or G
<400> 431
genaatteeg aatggatasa sacaastgaa gtacaaaata tttcagstut acatagegat 60
zaacaagasa gcacttetca ggaggactta caaatggaag tacactctan aaccatcate 120
tateataget manatatagaga trageacage tatattatt gracattage americaga 180
aagagatggg asacaseetc coaggagttt tgtgtgtgge gtootgggtt ttccaacaga 240
catcattora goattetgag attagggnga ttygggatea ttetggagtt ggaatgttea 300
acaaaagtga tgttgttagg taaaatgtac aacttctgga tutatgcaga cattgaaggt 360
gcastgagte typettttae tetgetgtit et
                                                                    392
c210x 432
<211> 387
<212> DNA
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1)...[387]
\langle 223 \rangle D = A,T,C or G
<400> 432
ggtateenta estaatemaa tatagetgta gtacatgttt teattggngh agattaceae 60
adatycaagg caacatgigt agaictutty intrafficit tightutata tactgiatty 120
ngtagtrcaa gctctcggna gtccagccac tgngaeacat gctcccttta gattaacctc 180
Stayacrots tigtignati gictgeacty tagngeecty tattetect etgicignes 240
attetgrige thetgagges teteettgng atgesgeges coareacaes gatgadages 300
etotyaatty ntocaateac agotgogatt dagadatact gaaatogtad aggacogga 360
acaacgtate gascectggs gtoottt
                                                                    387
<210> 433
<21.1> 281
<212> DNA
<213> Nomo sapiens
<220>
<221> misc_feature
<222> (1)...(281)
<223> n = A,T,C or G
<400> 433
ttcaactage anagammact gettemaggsn gigtammatg maaggettee segemetrat 60
digatizang sacaciaaga gaqqyacaag gringangco guaggaigto iscaciatag 120
caggenetat ttyngttgge tggaggaget qtggazaeca tggagagatt ggegetggag 180
atogeogtgg chaticoton tightattac accagngagy nictorgini goccactggt 240
thhaaaaccy niatacaata aigatagaat aggacacaca t
                                                                   281
<210> 434
<211> 484
```

```
<212> DNA
<213> Homo sapiens
<400> 434
ttulaanata agustttagt geteagtees tastgagtau tetttetete esstsetet 60
matrialite titleacting costingua quattacaea titleacting atquatating 120
tgltgcaaaa aaanaaangt gtctttgtit aaaaltactt ggtttgtgaa iccalcitige 180
titticecca tiggaacteg teattaecce ateteigaac tiggtegemae acaietgaag 240
egobagiota tuagostota acaggigaat iggeOggito toagaaccat ticaccoaga 300
cagnetyttt mtateetytt taatamattm yttigygtte tetaentyem tamesmaene 360
tgctccastu tgtomoxtam aagtetgtga CttgA&gttt agtcagcare cccaccaase 420
tttatttttc tatgigttill ligdaudata tgagtgitti gaasataasg tocccatgig 480
ttta
<21.0> 435
<211> 424
<212> DNA
<213> Homo sapienR
<400> 435
gegoegotoa gaqdaqqtoa otttetgeet teracqtoot oottoaagga agcoodatyt 60
gggtagettt caatateges ggftettaet odtetgeete tataagetea auccezeesa 120
egategggea agteaacccc otecotegee gaetteggaa Utygopagag tteagegcag 180
atgeectet gaggaggag caagatagat eagagearc gacategtac gaeetearc 240
cttggagaga ggaaaaaggs CaCabyagag gctgccaccg ccaCtbaccg agatggccct 300
ggtegageCC tityggggte tggaacetet ggacCcccom tgctetaart occacactet 360
gotateagaa actiaaacti gaggattito teigittite actogeaata aatteagage 420
aaac
                                                                   424
<210> 436
<211> 667
<212> DNA
<213> Homo sapiens
<220×
<221> misc feature
<222> (1) ... [667]
<223° n = A,T,C or G
<400> 436
accttyggaa nacteteaca atataaaggg tegtagaett tactecaaat teebaaaaagg 60
tectggecat gtaateetya aagtttteee aaggtageta taaaateett ataagggtge 120
agreetettet ggaatterte tgattteaaa gtotoaetet caagttettg aaaacgaggg 180
cagttrotga aagydaggta tagcasetga tetteagaka gaggaactgt gtgcaccgqq 240
atgogetgee agagtagget eggéttééag atgetgaeac éttébágágág madeaggact 300
gcceqqttty tostageact catcaaagtc cgqtceaugt ctgtgcttcg aatatsaacc 360
tgttcatgtt tateggactd attomagamt tttctatatc totttottat mtactotoca 420
agtteztaat getgeteeat gecomgolgg gtgagttgge caaateettg tygecatgag 4m0
gattoottia tyyygteagt gggaaaggtg teaatgyque tteggtetee atgeegaume 540
acceaagica caaaciicaa Cicciiggei agioraciic ggyClageca qaaaaaaagc 600
agaaacaaga aqeeaagget aaggettget geoobydean gaggaggggt geagutetez 660
tgttgag
                                                                   667
<210> 437
-: 211.> 693
```

```
<212> DNA
 <213> Homo sapions
<400> 437
ctacgtotea acceteanth budgetaagg asternaagt coamagatat tamgegaete bo
anacagonag gibaggazag eiggatiggo adadiaggad totanoatad ogggittigt 120
tanageteag gitaggagge igstaagett ggaaggaact teagaeaget tilleagate 180
atasaagata attottager catgitette teoagageag acetgaaatg acageacage 240
aggtactect ctattitese ecotottget tetactetet ggeagteaga cetgtgggag 300
gccetgggag aaugcagete tetggatgtt tqtacagate atggactatt etetgtggac 360
catticinca ggitaccia ggigacta tiggggggad agocagcate titagetite 420
attigagitt ctytotytot toagtagagg aaucttitgr tottoacact tracatolga 480
acacctarct getgttgete etyaggtggt gaaagacaga tatagagett acagtattta 540
tectatitet appearigag ggetgigggg tarritgigg igneaaaara gateetgiri 600
taxggacatg tigcitcaga gatytotgta actatotggg gyototgtig gotottaco 660
ctgcatcatg tgctctcttg gctgaaaatg acc
<210> 438
<2115 360
<212> DNA
<213> Homo sapiens
<400> 438
Ctgottatca reatgaatgt totoctgggc agegttgtgk totttgccac CUtogtgart 60
ttatgrasky catestycts tttcstscct astgsggag ttrcsggags ttcsaccage 120
atutttetae acetgigggi latyacaaag acaacigeea aagaatette aagaaggagg 180
artgraagta teletegten agaagaagga ceeamaanng acctgttete teagtgaate 240
gataatetaa tytyrtteta glaggeacag gyetreeagy ceaggeetea ttetestety 300
grotetaata ghoaataatt gigtagooat gootatoagi aaaaagatti tigagoaaac 360
<210> 439
<211> 431
<212> DNA
<213> Homo sapiena
<220>
<221> misc feature
<222> (1)...(431)
<223> \pi = A,T,C or G
<400> 439
gttectnnta actectgees gasacagete tectessest gagagetges erecteetee 60
tggccagggc agraagcett ægccttggct tettgtttet getttttte tggctagace 120
gesgtgtact agreauggag tiquagtttg tgactttggt attreggeat ggagaccgaa 180
gtcccattga cacutttocc actgacccca thanggastc ctcatggcca caaggattig 240
goddaetcae ecagetggge atggageage attatgaact tggagagtat ataagaaaga 300
gatategass attettgast gagteetatm aaratgasca ggtttatatt egaageseng 360
acgitigaccg gactitigatg agigeratga caaaccigge agreegicga cgeggeegig 420
aatttegtag t
<210> 490
<211> 523
<212> DNA
<213> Romo sapiena
```

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<400> 440
agagataaag Citaggtoom agttomtaga gttoormiga actalatgao tggccacaca 60
ggatettitg tatttaagga Utergagatt tigettgage aggattagat aaggetgite 120
titaaatgto igaaatggaa cagatticaa aanaaazee cacaatetag ggigggaaca 180
ayyaaggaaa gatgigaata ggCigatggg caaaaaaCCA atttacccat Cagttccagc 240
cttototoss ggagaggoss agazaggaga tavagtggag acatotoggas agttototos 300
actoganaec tychachato tybitthata titriyibaa aatabatgag gobucagaac 360
taaasattaa aacutottig tgircottigg tootiggaara titalgitoo tiitaaagaa 420
acanamatra aachttagag Aaayattiga tgtatgtamt acatatagca gotottgaag eso
tatatatatato ataquaanta agteatetga tgagancaag eta
<21D> 441
<211> 430
<212> DNA
<213> Homo sapiena
<400> 441
gitectricia activitycca gaaacagoto toutomacai gagagotgoa ecectrictus 60
tagocagage ageasgrett agocttaget tettattet quittette tagottagaer 120
gaagtgtact agccaaggag tigaagittg tgachtiggt gittoggout ggagarogaa 180
gtoccattga cacettteee actgacceca tasaggastc ctcatggees casggatttg 290
gocaactrac cragotogogo atogoogoago attatquact togoogatat ataagaaaga 300
gatalagada attotigaat gagtoolata aacaigaaca ggittatati cgaagcacag 360
acyttgaccy gactitgaly agtyctatga caaacctgge ageccytcga cycygccycy 420
aatttteg!:eg
                                                                   430
<21U> 442
<211> 362
<212> DNA
<213> Humo sapiens
<400> 442
ctanggaatt agtagtgbt0 00atcacttg httggagtgt getattctae aagnittiga 60
tttcctggaa tyacaattat attttaactt tggtgggga aagagttata ggaccacagt 120
ettemettet gatactigta auttomiett tintigeact igittigace attamgetat 180
atgittagaa atggtcatti tacggaaaaa ttagaaaaat totqataata gigcagaata 240
antgantten tyttitischt autttatett geerigteum tyecheatse asstrottit 300
tgattatttt ttgttttcat ttaccagaat aaanactaag aattamaagt ttgattacag 360
tc
<210> 443
<211.> 624
<212> DNA
<213> Homo sapiens
<220>
<221> misc_fcature
<222> (1).,(524)
<223 × n = A,T,C or G
<400> 443
tittilitit gomacacast atacalicaca gigamatgig Charcottgc amaitgomag 60
ttgazagaat taaatkoaqu ggagggaga gaaagaqtuo toagtaggga otgagracta 120
aatgoullatt ttaaaagaaa tgtaaagggo agamagcaat loaggotacc etgcct@ttg 180
tgotggetag tacknogglo ggtgteagea go nglggua ttgaacathg ceetqtggag 240
```

```
eccaaacear agaaaatggg gtyxxxttgg ceaactttct attxacttgg offcetgttt 300
tateauatet tytgaataat atcacctact toesegggon gttatgaggo ttasatgaso 360
taacgretae aaaacantta sacstagata sestagatge aagtactaty tatetgatan 420
atggtaaada toottattat tabagtosac golaaaatga atgtgtgtgo atatgotaat 480
agtacagaga gagggcactt eaacceacta agggcctgga gggaaggitt cutggaaaga 540
ngatgerigt gergggrees materiggre tactalgace riggermaat tattiammet 600
tigicectat cigctaaaca gate
<210> 444
<211> 425
<212> DMA
<213> Homo sapiens
<220>
<221> misc feature
<222> (1)...(425)
\langle 223 \rangle n = A,T,C or G
<400> 444
gracateatt nnicityodi teittgagaa taagaageto agtamatagi teagaagigg 60
quagettigt ccaggerigt gigtgaadde aatgittige tiagaaatag aacangiaag 120
ttcattgcta tagcataaca caaaatttgc ataagtggtg stcagcaaat ccttgaalsc 180
tgottmatgt gagaggttgg taamatoott tgtgommomo tetameteen tgamtgtttt 240
getgtgetgg gaentgtgna tyddagaela ggeraagetg gotglaagag claecagens 300
countiquest etgecacete etgetggdag galltgtttt tgcatcetgt gaagagceaa 360
ggaggeacea gggeataagt gagtagaett atggtegaeg eggeegegaa tetagtagta 420
gt.aga
                                                                   425
<210> 445
<211> 414
<212> DBB
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1)...(414)
<223> n = \lambda, T, C or G
<400> 445
catattate mittiggatt actitigges cotagigtt ctasaicete teteatiett 60
ttctgttttt cassaqcaya gatggccaga gtctcaacaa actgtatott caagtctttg 120
tgaaattott tgratgtggc agattattgg atgtagtttc ctttaactag Gatataaatr 180
tggtgtgttt cegataaatg aacagcaase tgtggtggaa ttaccatttg gascattgtg 240
autgammat igigieteta gabiaigimm camatameta titectamee attgatetit 300
ggatttttat aatcotzete acaaatgaet aggettetee tettgtattt tgaageagtg 360
tgggtgctgg attgataaaa xaaaaaaaag tcgacgcggc cgcgaattta gtag
<21U> 446
<211> 631
<212> DNA
<213> Homo sapiens
<22U>
<221> misc_f ature
<222> (1)...(631)
```

```
\langle 223 \rangle n = A,T,C or G
<400> 446
acaaattaga anamagtgoo agagaacacc acatanottg tooggaacat tacaatggot 60
totgcatgca tgggaagtgt gagcatteta tomatatgca ggagccalct tgcaggtgtg 120
atgoigglia lactggacom cactgigasa asamggacia cagigticta tangligtic 180
coggrecty: argatiteas tatsicitas togossetsi sattsgeecs attragatis 240
ctgtcatctg tgtqqtgqtc ctctgcatca caagggcc&a &ctttaggta atagc&ttgg 300
actgagattt gtaeactttc caaccttcca gyammtgccc cagamgcmac mgamttcaca 360
дападведся вывінстуру систасадії садалья/во тыслададод іспалдидуі 420
teatchassy ggagcatgit teaceatage tagactaceg agagettage etacacaata 480
raghattata garaaaagaa taagacaaga gatrtacara tyttgrottg rattbytggt 540
matchacach aatgaaaaca tgtachacaq chatathiga thatguatgg mhatathiga 600
aataghatac albgrottga tgtttttttt g
                                                                    631
<210> 447
<211> 585
<212> DWA
<213> Homo sapiens
<220>
<221> misc_feature
<222> (1)...(585)
\langle 223 \rangle n = A,T,C or G
<400> 447
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octagocate tantertgaa agtittocco aggingetat aasateotia tangggigea 120
gentettetg gaattrottet gattteamag tetemetete megttettgm ammegaggge 180
agiteetaam aggeaggtat ageaactgat etteagaaag aggaactgig igeacegaga 240
tgggctgcca gagtaggata ggattccaga tgctgacacc ttctggggga aacagggctg 300
ccapalitist catagorote atcasagter gateaxcate tatacters atatacace 360
gttcatgttt ataggactca Utcaagaatt ttctatatct ct.tt.cttata tactctccaa 420
gtt.cateatg Ctgctccatg cccagetggg tgagttggcc eastccttgt ggccatgagg 480
attoctttat ggggtcagtg gg848ggtgt caatgggact toggtctcca tgccgaaaca 540
ccassgicsc saactteaac tectiggeta giacactteg gieta
<210: 448
<211> 93
<212> DNA
<213> Homo Bapiens
<220>
<221> misc_feature
<222> {1}...(93)
<223> n = A.T.C or G
<400> 448
tgCtcgtggg teattetgan nnccgsacty acontgccag centgccgan yggccnecat 60
ggetecctag tgccotggag aggangggge tag
                                                                   93
<210> 449
<211> 706
c212> DNA
<213> Homo sapiena
```

```
<220>
<221> misc_feature
<222> (1)...(706)
<223> n - A,T,C or C
<400> 449
ecaagttest getnigiget ggacgvigga cagggggeaa aagcontige legigggtea 60
ttotgancad ogaactyace atgecageon tgeogatggt enteratggn tdootagtge 120
ertggagagg aggtgtetag teagagagta greetggaag gbggeeterg ngaggageem 180
rggggacage ateotycaga tggtegggeg cgteceatte greatteagg etycgraact 240
gttgggzagg gegategghg ogggootett egetattang ogggotggeg aaagggggat 300
gtgolgosag gogattmagt tgggtaacgo cagggtttto coagtonoga ogttgtaasa 360
cgncggccag tgaattgaat tteggtgacn ctatagaage gctatgrogt cgcatgcacg 420
ogtacgtasy ottogatoot ctagagegge ogcotactae tactaaatto goggoogegt 480
ogacytygga terneartya yagaytygay agtyscatyt yetygarnor yteratyway 540
cadtgagdag aagdtggang cacaacgroo dagadactoa cagetactca ggaggetgag 600
eacangtina accinggaage ingranytine aatgageiga galeayyeen eigencees 660
gcatggatga magagtgada otocatotta aaaaaaaaaaaaa
<210> 450
<221> 493
<212> DNA
<2135 Homo sapiens
<400> 450
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acagittiaa aaggissaac aacataaasa gaaslateet atagiggasa taagagagic 120
aaatqugqot gagaarttta caaagggato ttacagacat gtngccaata tcactgcatg 180
ageetaagta taagaacaac etttggggag aaaccateat ttgacagtga ggtacaatte 240
casglesynt agtgabatgg gtggaattaa actemaatta atentgeesy etgabacgea 300
agagaractg teagagagtt aaaaagtgag ttetatesat gaggngatte racagtotte 360
treagtread acardigina actracages daugttotta ascractigit chaacteign 420
taracateag astracetog agagetttae assetreest tocogagggt egangeggen 480
gogaatttag tag
<210> 451
<211> 501
<212> DNA
<213> Homo mapiens
<220>
<221> misc_feature
<222> {1}...[501}
<223> n = A_1 \Upsilon_1 C \text{ or } G
<400> 451
addededre carredcoar readderand coarrarrad assaudeds eastarded en
rtcttrgcta ttacgccage tggrgaaagg gggatgtgct gcaaggcgat taagttgggt 120
amogecaggg tittecceagt uncomedity tabaacgarg gueagtgami tgamittagg 180
tgacnotata yangagotat gaogtogoat guaogogtno gtaagottigg atoototaga 240
geggeegeet actactacta mattegegge egegtegacig tgggateene actgagagag 300
tggagegiqu catgigeigg acnotgicoa igazgeacig agoageagoi ggaggeacaa 300
одстосвдае астраковной жетовороду страдавсер gttqamcctg ggaggtggeg 420
gthgceatga gdtgagatca ggccnctgcn occompostg gatganagag tgammotoca 480
```

PCT/US99/15838 ** WO 00/04149 162

```
tottaaamaa maaamaaaaa a
                                                                    501
<210> 452
<211 > 51
<212 > DWA
<213> Homo sapiens
<220×
<221> misc_feature
<2229 (11...(51)
.223 n = N, T, C or G
<40U> 452
addequitte accritaces crecitites satygenett geographic (
                                                                   51
<210> 453
<211> 317
<212> DNA
<213> Homo Bapiens
<220>
<221> misc_feature
<222> (1)...(317)
<223> n = A,T,C or G
<400> 453
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acatetgaag agetagteta teageatetg geaagtgaat tggatggtte teagsaceat 120
thraccoana dagootytti ctatootyti taataaatta yttiggytto totacatyca 180
taucaaucco tgrtccaatc tgrcacutau aagtotgtga cttgeagttt antoagcacc 240
cccaccasar bubattito tatgigitti bigcaacata igagigitti gaaaataagg 300
tacccatgtr tttatta
                                                                   317
<210> 454
<211> 231
<212> DNA
<213> Homo sapiens
<400> 454
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taageracge Cacquiettg auggagtett gaatteteet etgeteacte agtagageea 120
agaagseesa attettetge attocagett gozascassa ttgttettet aggteteese 180
cottonttit toagtgiter assgeteetn acastitust gaacsarage t
                                                                   231
<210> 455
<211> 231
<212> DNA
<213> Home Sapiens
<480> 455
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Cattytteeg autgggettt ccecaggeta cacacacaaa acaggaaaca tgccaagtt 120
gtticaargn alfgatgadt telecaagga tetteetlig geategaeea catteegggg 180
Caangaattt ctcstagesc ageteachat acagggeter titeteete a
                                                                   231
```

```
<210> 456
<211> 231
<212> DNA
<213> Homo sapiens
<400× 456
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thoughtung tattateget attattotty gagmaaccet gtotyttme tytmaccett 120
tgcactcasa ttcctttato aggastaect acatagodac tatttacasa govattggas 180
cotttttatt tygtgeaget getagtemyt coetgaetga cattgecamy t
<210> 457
<211> 231
<212> DNA
<213> Homo sapiens
<220×
<221> mise feature
<222> (1) ... {231}
<223> n = A.T.C or G
<400> 457
Chappiacce aggggtetga exateteton titantague gatagraaaa tegeteatea 60
geatteetta alatgatett getataatta galttetete eattagagit eataeagiin 120
Unitingatit tattageast ofcitteaga agacectiga gatestaag cittgtatee 180
agitgicias atogatgout cattlectet gaggletuge tggettinge g
<210> 458
<211> 231
<212> DNA
<213> Homo Sapions
<400> 458
egytotagtt coeccactt coastcoect ctactetete taggactagg ctaggssaag 60
agaagagggg tggttaggga agergttgag acctgaagre ceacceteta cettertea 120
acaccotamo ettgggtmac egomtttgga attateatt( gggmtgagta gaatttocaz 180
ggtretgggt Uaggdatttt ggggggddag acddowggag aagaagatto t
<210> 459
<211> 231
42125 DNA
<213> Homo sapiens
<400> 459
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godotgeact gitticocto daccaeagee atectgicou teatiggeic igigotitee 180
actateraca gioaccgico caatgagaaa caagaaggag caccolocan a
                                                                  231
<23.0> 460
<211> 231
<212> DNA
<213> Homo sapiene
<400> 460
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```
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octatoaccc tattcttggg ggctgcttct tcacagtgat catgaagcct agcagcaaat 120
cenaentone escapeasa eggecagent ggsgeedata gaagggteet cetypoxgeea 180
gtggagettg gtecageete cagleeuce etaceagget taaggataga a
                                                                   231
<210> 461
<211> 231
<212> DNA
<213> Homo sapiens
<400> 461
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grgtgtgttc caqaaqagtg tgtgcatgrc øgagggqaaa caggrgcctg tgtgtcctgg 120
gtggggttca gtgaggaghg ggaaattggt tragragaac caageegttg ggtgaetaag 180
agggggatto catqquactg atagageest atagttteng agetgggaat t
<210> 462
<211> 231
<212> DNA
<213> Buno sapiene
<400> 462
aggtaccotc attgtagoda teggyammatt gatgttomet ggggatragt gambtammatg 60
gggtceteck agtatezza tisazzases eaguettrat genceatete atatgatgig 120
gaagaactgt tagagagacc eacagggtag tgggttageg atttccagag tcttacattt 180 -
totagaggag gtatttaatt tottotoact catcomytgt tgtatttagg #
                                                                   233
<210> 463
<211 > 231
<212> DNA
<213> Homo sapiens
<400> 463
tactoraged tagitgacage sugagacent atracogodo cocacerrae caassassan 60
actgagtaga Caggtgteet ettggeatgg taagtettaa gteceeteec agatetgtga 120
cattigacas gigicitito otologacci eggigicodo aleigagiga gasaagqoag 180
tggggaggig gatettecag tegaageggl atagmageee gigigaaaag e
                                                                  2.31
<210> 464
<211> 231
<212> DNA
<213> Homo sapiens
<400> 464
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aaggacatca catatgaaga atgittaagu tggaggigge aacgigaatt gossacaggg 120
cotgettesg tgactgtqtg outgragter cagetactus ggagtetgtg tgaggecagg 180
ggtgddagog caccagetag atgetetgta aettetagge ceeattitee e
                                                                  231
<210> 465
<211> 231
<212> DNA
<213> Home sapisos
<400> 465
```

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catestigite tagotetest antecteses youtotoxes caggetrasc troageteet 60
giggcaaatt agcaacaee! tutgacatea tatttaigg! tidigtairt tightgarga 120
aggatiggead abittitget tgtgttcata atatacteag attagttcag ofucateaga 180
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<210> 466
<211.> 23)
<212> DNA
<213> Homo sapiens
<400> 466
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cetgigraat raaatattgi gemgamiter etagenggae aagtemomaa gaetatager 180
astastiggsg accaptorra caspangsca accaptontt gigtgongct q
<210> 467
<211> 311
<212> DNA
<213> Homo sapiens
<400> 467
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tgtgccttaa cagaaggtot tgagattota agtgggaato atttcagtga ctgtcatgtg 180
gcetgggtct ctgcccaage tegtaatgeg actatageaa ggrggetgtg ggacgtcagt 240
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ctgcagcaga c
<210> 468
<211> 3112
<212> DMA
<213> Homo sapiens
<400> 468
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tygaaggeac tyggalgodty migaigaagi ggactitcam aciggggeac tacigmmang 180
atgggatyyc cagagacaca ggagatgayt tggagcaagc tcaataacka agtggttcaa 240
egaggaettg gaaltgeatg gagetggage tgaagtttag cocaattgtt tactagttgz 300
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azatgggata cacagtatga totataaagt gggatatagt atgatotact toactgggtt 420
atttgaagga tgaattgaga taatttattt caggtgccta gaacaatgcc cagattagta 480
cattleggtgg aactgagaaa tggcataaca ccaaatttaa tatatgtcag atgttactat 540
gattateatt caateteata gittigicat ggcccaattt ateeteactt gigecteade 600
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gattaaataa aysacttgag aagaacaggt ltcattamac ataamatcaa tgtmgacgca 840
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acctytywyn tiaaggetet thytygggaa ygacmaagat etgiamatti hemytteet 1000
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```

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atomittemi atticiance cicaaaacaa agetgitgia statuigate tetaeggite 1920
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ascetestag tatettatet satutaette atticiobat otetateara anatomaca 2880
agentitices agasticate ragigeasal occommaget ascentitate estiteateg 2940
tyagtgeget ttagaattitt ggCdmateat actggtcact tmtoteaact ttgagatgtg 3000
titigicaling legituating adagasatag godestating iganoceatl tangonicae 3060
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<210> 469
<211> 2229
<212> DNA
<213> Nome sapiens
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tgatttgcca aaattctaaa gcgdactcac catgasatgg stamaggtta cctttggggu 180
tttgcactgc Atquattotg tgaaaagctt gttggatatt gtgatagagu taqagaaatg 240
aagtatatta tataagatac tatgaggtte cotgootliby ettoacator caggottaca 300
eacgigecoo atamicatic cotogiggo totigoatit caletatin ictaeactoi 360
tataatemaa tacactttta gtattigetg teteatgtga tgatgaatet cataigtgee 420
Cottettige atgaagtaag etagtomaet tattramaan titmembrat tetagatita 480
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ggagggatgy ggagaggetg tggGUgtata cageeteagt acaaggetaa qeattttaac 660
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gceckaaagt gggaaatgaa tiicegtatg ggcaaagaca cigaggatga igiigailag 900
atautteact ongtaatgal catgetgtgt ghraghaagl ataaccotgg aaagatottg 96D
```

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agaigning capostatic acagainne igggccapaa contentag qamaameagt 1020
cagotacata ttaggcagca acacgaaggg totttgaaca aaatgagtza tgttattota 1080
cagiglagae aggicecagi acagaicigg gaartaaeta itaasaaiga gigiggcigg 1140
atatatggag aatgiigggc ccagaaggax ccgiagagai cagatattac aacagctiig 1200
ttttgagggt tagaaatatg aaatgatttg gttatgaacg cacagtttag gcagcagggc 1260
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agacamatgg canggitgica geatacectg eachtgaght gagagetaca cacamtatta 1860
tiggtttccg agcateacaa acaccctotc tgtttcttca ctgggcacag aattttaata 1920
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ctalaaatac aaaaattago tyggegtget ggtgcatgoo tgcaatcoca gooccaacac 2220
aat.ggaat t.
                                                                  2229
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<210> 470 <211> 2426 <212> DNA

<213> Homo sapiens

<400> 470

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canaatteta aagegeacte accatgaaat ggataaagge tacctttggg gatttgcart 180
gcatgeattc tytgaaaagc ttgttggate ttgtgataga gatagegeee tgaagtatel: 240
tatataagat actatgaggt tecetgeett tgetteacat eccaggetta caaacgtgee 300
ccataaacat tecetetgtg getetngcat ttemtatatt tatetaaact ettataatea 360
aattacactt tragtatite objectcate teatgates torcatatet etcottctt 420
tgcatgeegt eagatagtra acttattcae eactttacat cattcteget ttaagagece 480
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C12N 15/12, C07K 14/47, C12Q 1/68, A61K 39/395, G01N 33/68, 33/574, C07K 16/30, C12N 15/62, 5/02 // A61P 35/00		(43) International Publication Date: 27 January 2000 (27.01.		
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- (71) Applicant: CORIXA CORPORATION [US/US]; Suite 200, 1124 Columbia Street, Seattle, WA 98104 (US).
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FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE,

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(54) Title: COMPOSITIONS AND METHODS FOR THERAPY AND DIAGNOSIS OF PROSTATE CANCER

(57) Abstract

Compositions and methods for the therapy and diagnosis of cancer, such as prostate cancer, are disclosed. Compositions may comprise one or more prostate tumor proteins, immunogenic portions thereof, or polynucleotides that encode such portions. Alternatively, a therapeutic composition may comprise an antigen presenting cell that expresses a prostate tumor protein, or a T cell that is specific for cells expressing such a protein. Such compositions may be used, for example, for the prevention and treatment of diseases such as prostate cancer. Diagnostic methods based on detecting a prostate tumor protein, or mRNA encoding such a protein, in a sample are also provided.

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a. CLASSIFICATION OF SUBJECT MATTER
1PC 7 C12N15/12 C07K14/47 A61K39/395 G01N33/68 C12Q1/68 C12N5/02 C07K16/30 C12N15/62 G01N33/574 //A61P35/00 According to International Patent Classification (IPC) or to both national classification and IPC 8. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) C12N C07K IPC 7 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practical, search terms used) C. DOCUMENTS CONSIDERED TO BE RELEVANT Citation of document, with indication, where appropriate, of the relevant passages Relevant to claim No. WO 97 33909 A (CORIXA CORP) 1-22, A 18 September 1997 (1997-09-18) 29-31, 35-49, 53-79 the whole document SJOGREN H O: "Therapeutic immunization 23-28, Α 32-34, against cancer antigens using genetically 53-57 engineered cells" IMMUNOTECHNOLOGY, vol. 3, no. 3, 1 October 1997 (1997-10-01), pages 161-172, XP004097000 ISSN: 1380-2933 the whole document -/--X Further documents are listed in the continuation of box C. Patent family members are listed in annex. X * Special categories of cited documents : "I" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international "X" document of particular relevance; the claimed invention filing date cannot be considered novel or cannot be considered to "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such docu-ments, such combination being obvious to a person skilled "O" document referring to an oral disclosure, use, exhibition or other means in the art. *P* document published prior to the international filing date but later than the priority date claimed "&" document member of the same patent family Date of the actual completion of the international search Date of mailing of the international search report **0** 4. 05. 00 31 January 2000 **Authorized officer** Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentiaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, ANDRES S.M. Fax: (+31-70) 340-3016

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International Application No
PC7, JS 99/15838

	PC1, JS 99/15838
ation) DOCUMENTS CONSIDERED T BE RELEVANT	
Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
CHU R S ET AL: "CPG OLIGODEOXYNUCLEOTIDES ACT AS ADJUVANTS THAT SWITCH ON T HELPER 1 (TH1) IMMUNITY" JOURNAL OF EXPERIMENTAL MEDICINE, vol. 186, no. 10, 1 November 1997 (1997-11-01), pages 1623-1631, XP002910130 ISSN: 0022-1007 the whole document	14-20, 25-27, 41-47
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ZITVOGEL L ET AL: "Eradication of established murine tumors using a novel cell-free vaccine: dendritic cell-derived exosomes" NATURE MEDICINE, vol. 4, no. 5, 1 May 1998 (1998-05-01), pages 594-600, XP002085387 ISSN: 1078-8956 cited in the application	
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<pre>page 3, line 20 -page 22, line 2 page 35, line 9 - last line page 76, line 34 -page 78, line 22 claims</pre>	
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page 2 -page 24 example 2 page 35, line 15 -page 36, line 11 page 81, line 14 -page 83, line 11 claims	
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n ational application No.

PCT/US 99/15838

B x I Obs rvations where certain laims wer found unsearchabl (Continuation f it m 1 f first sheet)
This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:
1. X Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely: Remark: Although claims 29-34, 48-49, 52, 55-57 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.
2. Claims Nos.: because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).
Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)
This International Searching Authority found multiple inventions in this international application, as follows:
see additional sheet
As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. X No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1-79 all partially
Remark on Protest The additional search fees were accompanied by the applicant's protest. No protest accompanied the payment of additional search fees.

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FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Invention 1. Claims: 1-79 (all partially)

A polypeptide comprising at least an immunogenic portion of a prostate tumor protein defined as SEQ ID 108 and which is encoded by the related SEQ IDs 2,3,107 (according to the Description of the Sequence Identifiers), fragments and variants thereof, fusion proteins comprising it, polynucleotides or oligonucleotides derived therefrom, antibodies or fragments thereof binding to the polypeptide, pharmaceutical compositions or vaccines comprising these products and their use in methods for inhibiting, monitoring or diagnosing the development of a prostate cancer, for removing tumor cells from a sample or for expanding and/or stimulating T-cells.

Inventions 2. to 439. Claims: 1-79 (all partially and as far as applicable)

As for subject 1. but concerning respectively SEQ IDs 1,4-106,109-111,115-171,173-175,177,179-305,307-315,326,328,330,332-335,340-375,381,382 and 384-472.

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International Application No
PC1, US 99/15838

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